BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN

Joint Application of Wisconsin Public Service Corporation and Wisconsin Electric Power Company for authority to Construct the Weston Reciprocating Internal Combustion Engine Project in the Villages of Rothschild and Kronenwetter, Marathon County, Wisconsin	5-CE-153

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
°F	Fahrenheit
AEO	Annual Energy Outlook
ANRPL	ANR Pipeline Company
APE	Area of Potential Effects
ATC	American Transmission Company
BACT	Best Available Control Technology
BESS	Battery Energy Storage System
Btu	British thermal unit
Btu/kWh	British thermal unit per kilowatt-hour
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
BMPs	best management practices
CC	combined cycle
CFR	Code of Federal Regulations
CH_4	Methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CONE	cost of new entry
CPCN	Certificate of Public Convenience and Necessity
CTs	combustion turbines
DATCP	Department of Agriculture, Trade and Consumer Protection

Abbreviation	Term/Phrase/Name
EPA	U.S. Environmental Protection Agency
EPC	Engineering, Procurement, and Construction
ER	Endangered Resources
ESG	emergency start generator
DART	Day-Ahead and Real-Time
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
ft	Feet
GHG	greenhouse gas
GIS	geographic information system
GRP	Generation Reshaping Plan
H_2SO_4	sulfuric acid
HAPs	hazardous air pollutants
HFCs	hydrofluorocarbons
HHV	higher heating value
IMM	Independent Market Monitor
IPaC	Information for Planning and Consultation
ISO	International Organization for Standardization
Joint Applicants	Wisconsin Electric Power Company and Wisconsin Public Service Corporation
kV	Kilovolt

Abbreviation	Term/Phrase/Name
MISO	Midcontinent Independent System Operator
MMBtu/day	million British thermal units per day
MW	Megawatts
MWh	megawatt-hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCWRPC	North Central Wisconsin Regional Planning Commission
NFPA	National Fire Protection Association
NHI	Natural Heritage Inventory
NOx	nitrogen oxides
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	New Source Review
O&M	operation and maintenance
PLEXOS	PLEXOS market simulation software
PM	particulate matter
$PM_{2.5}$	particulate matter with aerodynamic diameter less than or equal to 2.5 micrometers
PM_{10}	particulate matter with aerodynamic diameter less than or equal to 10 micrometers
PPA	purchased power agreement
PSCW	Public Service Commission of Wisconsin
PSD	Prevention of Significant Deterioration
RICE	reciprocating internal combustion engine

Abbreviation	Term/Phrase/Name
SCR	selective catalytic reduction
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SF_6	sulfur hexafluoride
Sites	Preferred and Alternate Sites
SPCC	Spill Prevention, Control and Countermeasures
tpy	tons per year
UMERC	Upper Michigan Energy Resources Corporation
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VOCs	volatile organic compounds
WEC	WEC Energy Group
WEPCO	Wisconsin Electric Power Company
WDNR	Wisconsin Department of Natural Resources
WHPD	Wisconsin Historic Preservation Database
WisDOT	Wisconsin Department of Transportation
Wis. Admin. Code	Wisconsin Administrative Code
WPDES	Wisconsin Pollutant Discharge Elimination System
WPDES General Permit	WPDES General Permit No. WI-S067831-5

Abbreviation	Term/Phrase/Name
WPSC	Wisconsin Public Service Corporation
Wis. Stat	Wisconsin Statute
WRAPP	Water Resources Application for Project Permits

1.0 PROJECT PROPOSAL

Wisconsin Public Service Corporation (WPSC) and Wisconsin Electric Power Company (WEPCO), (collectively Joint Applicants), submit this application to the Public Service Commission of Wisconsin (PSCW) for a Certificate of Public Convenience and Necessity (CPCN) under Wis. Stat. § 196.491(3) and Wis. Admin. Code Chapter PSC 111 to construct a natural gas electric generating facility (the Project or Facility) with a capacity of approximately 128 net megawatts (MW). The Project will consist of seven Wärtsilä W18V50SG reciprocating internal combustion engine (RICE) generators. Each RICE generator will have nominal capacity of 18.8 MW. The Project will be located at the existing Weston Generating Station on land owned by WPSC, located in the Villages of Rothschild and Kronenwetter near Wausau, Wisconsin.

Joint Applicants submitted an Engineering Plan to the PSCW and Wisconsin Department of Natural Resources (WDNR) on February 16, 2021 in accordance with Wis. Stat. § 196.491(3)(a)3.a. WDNR provided permit and approval requirements to support the issuance of a CPCN on February 24, 2021.

1.1 Project Facilities

The following sections provide information related to the proposed Project.

1.1.1 Owner and Operator of Proposed Facility

Joint Applicants will be primarily or exclusively responsible for the Facility's design, construction, startup testing, and operation and maintenance (O&M). This will help ensure that the Facility meets the Joint Applicant's expectations for safe and reliable generation, efficient operations, schedule, and cost targets.

WEPCO is located at:

231 W. Michigan Street
Milwaukee, Wisconsin 53203

WPSC is located at:

700 North Adams Street
Green Bay, Wisconsin 54307

1.1.2 Cities, Villages, Townships, and Counties Directly Impacted

The Project will be constructed in the Village of Kronenwetter, in Marathon County. The Project is near several other cities, villages, and towns in Wisconsin, including the Cities of Schofield and Wausau, the Villages of Rothschild and Weston, and the Towns of Mosinee and Rib Mountain. In addition to the natural gas-fired RICE generating facility, the Project would include tie-in to an existing gas conditioning station for natural gas fuel supply and interconnection to an existing 115-kilovolt (kV) electrical transmission line, both located at the Weston Generating Station.

1.1.3 Contractual Agreements

The Joint Applicants will negotiate a replacement generator interconnect agreement with the Midcontinent Independent System Operator, Inc. (MISO) and American Transmission Company (ATC). Joint Applicants will engage an Engineering, Procurement, and Construction (EPC) contractor for the construction of the facility. Joint Applicants will also enter a joint ownership agreement and a joint operating agreement for the Project.

1.1.4 Type of Power Facility Proposed

The Facility will consist of an approximately 128-MW electric generating unit consisting of seven RICE generators. This is a modern reciprocating engine facility design based on Wärtsilä W18V50SG generators. Further details of this proposed power plant are provided in Section 3.1.1.

1.1.5 Potential Use for Excess Heat or Steam

The Project will not produce excess heat or steam which could be collected for secondary use.

1.1.6 Proposed Generating Unit

The Project includes an approximately 128-MW electric generating unit consisting of seven RICE generators. The Project will burn natural gas without the capability to use a backup fuel. The Project will be cooled by a closed-loop cooling water system that uses radiators with fans.

1.1.7 Estimated Capacity Factors

The capacity factor of an electric generating facility is calculated as the actual power generation of a facility over time compared to its potential power generation if it had operated at full nameplate capacity over that same period. It is an estimate of how often a facility is run during a year and is expressed as a ratio or a percentage.

There are several factors that will affect the capacity factor of the Project. These factors include fuel pricing, temporary transmission constraints, efficiency of the facility, maintenance requirements, power

demand, and competing generation resource availability, capacity, and efficiency. Based on current projections, the Base Load annual capacity factor for the Facility is expected to be between 40 and 60 percent over its life with monthly variations. The Facility is planned to be operated in both base load and peak load configurations. Additional information related to the proposed Facility's capacity factors are provided in Section 3.1.6.1.

1.1.8 Temporary and Onsite Storage

The following sections describe the natural gas and water facilities, including those facilities that will provide temporary or permanent onsite storage.

1.1.8.1 Natural Gas Fuel Supply

The Project will burn natural gas without an option for backup fuel. The reciprocating engines will be designed to burn pipeline quality natural gas only. New facilities for the natural gas infrastructure will include an approximately 1,800-foot, 12-inch diameter pipeline from an existing gas conditioning station on the Weston Generating Station site. There will not be any on-site natural gas storage.

1.1.8.2 Water Supply and Discharge

Service water and domestic use water will be provided by the existing potable water source on the Weston Generating Station site, which is the Village of Kronenwetter municipal water supply system. The primary service water uses for the Facility will include water for refilling the closed cooling water systems associated with each engine as evaporation occurs over time and periodic spray washes of the compressor side of the engine turbocharger. Potable water will be provided to the control room, break rooms, restrooms, office areas, including plumbed safety showers and eyewash stations located in the engine hall building and in the tank enclosure building. The Facility water systems will be designed to maximize water reuse and recycling and minimize water consumption within the Facility systems.

A floor drain and equipment drain or trench system will be installed at each engine to collect oil-contaminated wastewater from the spray washes which will drain into an oil-contaminated process wastewater system. This system will also collect condensate and process wastewater from all process drain locations in the Facility buildings. The water will be collected in a sump and transferred to an above grade atmospheric oily water storage sized to hold a leak equal to the volume of one engine lube oil sump. This oily water storage tank will be in the tank enclosure building within concrete containment. The oily water storage tank will be equipped with tank venting, leak detection, level transmitter, and associated high-level alarms. The Project will not use the existing wastewater treatment systems for treatment of wastewater generated by the operation of the RICE units. All process wastewater generated by the project

will be removed and treated offsite by a third-party contractor. Sanitary wastewater from bathrooms, showers, and other employee areas will be collected and routed to the existing lift station, which discharges to the Village of Kronenwetter municipal sewer system for offsite treatment.

1.1.8.3 Heat or Steam Delivery

The Project is designed without heat or steam export capabilities.

1.1.8.4 Waste Disposal

The Project will not generate any solid wastes. The Project will be natural gas-fired and will not generate an ash byproduct requiring waste disposal.

1.1.9 Electric Transmission Interconnections

The Project will use the existing Point of Interconnection at the Weston Substation. Interconnection Service will be obtained using the MISO Generating Facility Replacement Process in conjunction with the retirement of the Weston 2, 31 and 32 units.

Joint Applicants have submitted requests for Optional Studies to evaluate the replacement of Weston 2, 31 and 32 with the Project. It is expected that these studies will determine that no additional transmission system upgrades will be necessary to replace the current generating units with the Project units. The MISO study is not expected to affect or alter the facilities that are subject to this application (i.e., those facilities located between the Project and interconnection at the Weston substation). If any network upgrades are identified by MISO that require PSCW approval, Joint Applicants expect those facilities will be permitted separately by their respective owners. The results of the Optional Studies are anticipated to be received in late April. Joint Applicants expect MISO will use the information obtained from the Optional Studies as part of the Generation Facility Replacement Process such that restudy is not required when the official request for replacement is submitted.

1.1.10 Project Life Span

The Project is designed for an operating life of not less than 30 years. The Project facilities may operate over a longer period.

1.2 Project Costs

The Project total costs are estimated to be $171,400,000. The approximate breakdown of this cost is as follows:

Item	Estimated Cost
EPC Contractor	$85,000,000
Equipment Supplier	$71,000,000
Owner	$15,400,000
Total	**$171,400,000**

1.3 Project Sites

Two alternative sites (Preferred and Alternate) were selected as possible locations for the proposed Facility; both of which are located on the Weston Generating Station property. The Sites are further described in the following sections.

1.3.1 Locations and Footprints of the Sites

The Sites are located at the Weston Generating Station on a 450-acre parcel of WPSC-owned land and located in the Village of Kronenwetter in Marathon County, approximately 7 miles south of Wausau (see Volume I Appendix A for location map and Facility site aerial photo).

The Preferred Site is in the central portion of the property, on the west side of the Weston Generating Station cooling towers and is currently an unused parking area. The site has been used previously for parking and materials laydown and currently has sparse gravel surfacing with minimal vegetation.

The Alternate Site is located along the southern boundary of the Weston Generating Station property and is immediately north of the ATC Gardner Park 345-kV switching station. The Alternate Site is currently open, unused land that was previously used as a laydown area for previous onsite capital projects.

See Volume I Appendix B (Site Arrangements) for figures showing the location of both Sites and the preliminary facility arrangements for each site.

1.3.2 Geology, Topography, Land Cover, and Land Use

The geology of the Sites includes consolidated sedimentary rock deposited as sequences of sandstone, shale, limestone, or dolomite. This makes up the current sedimentary rock aquifer and confining bed. Beneath the consolidated sedimentary rock is Precambrian crystalline rock (Ground Water Atlas of the United States, 1992). The depth to bedrock at the Weston Generating Station location is between 100 and 110 feet. See Volume I Appendix C (Bedrock Geology Map) for a map of the geology of the area and Section 5.4 for additional information related to the geology of the Sites.

The topography of the Sites is flat with an elevation of approximately 1,180 feet above sea level. See Volume I Appendix D (Topographic Map) and Section 5.5 for more information related to topography of the area and anticipated changes to site topography.

According to the U.S. Department of Agriculture Soil Survey of Marathon County, most of the Preferred Site is associated with the Pits, gravel soil series. The northeast corner of the Preferred Site is comprised of Mahtomedi loamy sand (0 to 6 percent slopes); the entirety of the Alternate Site is also comprised of this soil series. No mapped hydric soils are located within the boundary of either site although the wetland determination indicates there may be hydric inclusions. See Volume I Appendix E (Soil Survey and Hydric Soils Map and Appendix S Wetland Determination). These soil types are described further in Section 5.6.

The land use and land cover for the Sites is classified as Developed, High Intensity according to the Wiscland 2 land cover data set provided by WDNR. The Sites are currently used to support operation of the existing Weston Generating Station. See Volume I Appendix F for a map showing existing land use and land cover. Section 5.8 provides additional detail relating to land cover. Within the surrounding area, the primary land cover is woodland with a mixture of deciduous and evergreen forest. The Wisconsin River borders the Project area to the west with primarily industrial and commercial land uses to the north and east of the Weston Generating Station. To the south and west is a mixture of commercial and residential land use.

1.3.3 Special/Unique Natural or Cultural Resources

Special/unique natural or cultural resources in the Project are identified below. Further details about these resources are provided in Section 5.10 and Section 5.7, respectively.

1.3.3.1 Natural Resources

A review of the WDNR Natural Heritage Inventory (NHI) was completed for the Project area. There is a peregrine falcon nesting box at the existing Weston Generating Station, located at the north side of the Project area. This nesting box has successfully fledged chicks in the past. Additionally, there are four bald eagle nests that have been recorded more than 1,000 feet outside the Project area. During the field review, no bald eagle nests were located within the property boundary. The Blanding's turtle may have suitable habitat within the Project area according to NHI data, although the Project will not impact wetlands or waterways. Joint Applicants will coordinate with WDNR staff to avoid and minimize any impacts to the element occurrences identified in this report.

1.3.3.2 Cultural Resources

A cultural resources survey was completed in 1979 for most of the Weston Generating Station property prior to construction of Weston Unit 3. Areas of potential disturbance resulting from Project construction and operation at either the Preferred or Alternate Site were included in the 1979 survey. The survey identified one archaeological site on the Weston Generating Station property, located in the southwest area of the Project boundary. This archaeological site is adjacent to the Wisconsin River, within a wooded area. The construction or operation of either the Preferred or Alternate Site will not affect this archaeological site. Other than this single archaeological site, there are no other known traditional cultural, archeological, or historic architectural properties within the Project area or at the Sites that would be affected by the construction and operation of the Facility. Joint Applicants also conducted a literature review of previous archaeological surveys in the vicinity of the Project area. A copy of the review has been submitted to the State Historic Preservation Office (SHPO) for concurrence.

1.3.4 Residential Concentrations

Population within the Project vicinity resides predominately in the Village of Kronenwetter, in residential subdivisions located southwest of the southern boundary of the WPSC property, approximately 0.8 mile and 0.4 mile from the Preferred and Alternate Sites, respectively. The other closest residential area is located west of the Preferred Site on the opposite bank of the Wisconsin River in the Town of Mosinee. See Volume I Appendix G for a map showing the Sites in relation to the nearest residential concentrations.

1.3.5 Existing Area Utilities

Service water and potable water will be provided by the existing water source on the Weston Generating Station site, which is the Village of Kronenwetter municipal water supply system. The Project will require no construction of water pipelines offsite and no change in the Village of Kronenwetter's existing water or sewer utility facilities because water and sanitary sewer service lines with sufficient capacity are currently located along Business Highway 51 adjacent to the Weston Generating Station.

The existing transmission facilities at the Weston site consist of 115kv and 345kv facilities. The Weston switching station is a 115-kV breaker and a half station interconnected by five 115kv circuits, two of which connect directly to the on-site Gardener Park station that is fed by two 115/345-kV transformers. The existing switching station will provide a 115-kV interconnection for the proposed Project generators. The interconnection requirements are the same for the Preferred and Alternate Sites.

The natural gas requirements for the Project will be supplied through the existing ANR Pipeline Company (ANRPL) natural gas transmission pipeline system which feeds to a pipeline system owned by WPSC that includes current infrastructure onsite. No modifications to the ANRPL pipeline system will be required to serve the Project. A 12-inch diameter pipeline will be installed from an existing gas conditioning station on the Weston Generating Station site to the Project site. Volume I Appendix H contains a map of the existing electrical transmission and natural gas pipelines on the Project site.

1.3.6 Expected Connecting Utilities

Volume I Appendix H (Linear Infrastructure) contains a map of the planned utility connections for the Project.

1.3.7 Railroads

A Canadian National rail line is located along the eastern boundary of the WPSC property and follows the Old Highway 51 corridor. This rail line is connected to the existing rail spur at the Weston Generating Station. No additional connections will be required by the Project. See Volume I Appendix I for a map showing the Sites in relation to the nearest railroads.

1.4 Site Selection Process

Site selection was based on a number of factors including the following: the site currently houses an existing power plant, the transmission infrastructure and the natural gas infrastructure currently exist at the site, the Weston site will provide support to the 115kV transmission system, and siting at Weston allows Joint Applicants to use MISO's Generation Facility Replacement Process. Please see section 2.1.3 for additional details on the benefits of the selecting the Weston site.

1.5 Permits and Approvals

The following sections discuss the Federal, State, and local permits and approvals needed for the Project. Joint Applicants intend to seek all local permits requested without regard to whether the issuance of a CPCN would pre-empt such permits.

1.5.1 Federal, State, and Local Government Correspondence

Volume II Appendix A provides copies of official correspondence between Joint Applicants and Federal, State, and local agencies.

1.5.2 Federal and State Permits and Approvals

Table 1-11 and 1-2 list the Federal and State permits and approvals required for the Project, respectively. All permits listed below are anticipated to be applicable to both Sites.

Table 1-1: Federal Permits and Approvals

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone #)
FAA[1]	Construction or alteration of structures more than 200 feet above ground level.	7460 Notice of Proposed Construction or Alteration (14 Code of Federal Regulations (CFR) S77.13)	To be completed	TBD
USFWS[2]	Land disturbance construction activities	Endangered Species Act and National Bald Eagle Management Guidelines	Guidelines to be followed	TBD
EPA[3]	Storage of petroleum products	Modify existing Spill Prevention, Control and Countermeasures (SPCC) Plan and Facility Response Plan (40 CFR 112)	To be completed	N/A
USACE[4]	Discharge of dredge or fill materials into waters of the U.S.	Clean Water Act, Section 401/404 Permit	TBD	TBD

[1]FAA – Federal Aviation Administration
[2]USFWS – U.S. Fish and Wildlife Service
[3]EPA – U.S. Environmental Protection Agency
[4]USACE – U.S. Army Corps of Engineers

Table 1-2: State Permits and Approvals

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone #)
PSCW[1]	Building and operating generating units	Certificate of Public Convenience and Necessity (Wis. Stat. §196.491(3))	N/A	TBD
WDNR[2]	Construction and operation of new source of air emissions	Construction and operating permits: (Wis. Admin. Code NR5 405 through 407, 40 CFR Part 52.21), and acid rain permit exemption (40 CFR Part 75 and NR 409)	To be filed	TBD
	Discharge hydrostatic test water from pipelines, water mains, tanks, or vessels	WPDES[5] hydrostatic test water discharge permit (Wis. Stat. § 283)	To be filed	TBD

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone #)
	Erosion control and storm water management for land disturbance during construction	WPDES Construction site storm water discharge permit (Wis. Admin. Code NR 216)	To be filed	TBD
	Required to discharge non-contact cooling water, air conditioning condensate, and similar discharges free of toxic substances to surface waters or seepage systems	WPDES non-contact cooling water or condensate or boiler water discharge permit (Wis. Stat. § 283)		TBD
	Operational storm water pollution prevention plan modification	WPDES Industrial storm water discharge permit (Wis. Admin. Code NR 216)	To be completed	TBD
	Various land disturbance construction activities	Potential impacts to State-protected threatened and endangered species	Guidelines to be followed	TBD
	Invasive species management for land disturbance during construction	40 Invasive Species Identification, Classification and Control (Wis. Adm. Code NR 40)	Guidelines to be followed	TBD
	Wetland and waterway impacts	Chapter 30 waterway, wetland impacts (Wis. Stat. Ch. 30), Water Quality Certification. No waterway or wetland impacts are expected.	TBD	TBD
Wisconsin Department of Safety and Professional Services	Construction of all buildings and structures	Approval of plans and specifications (Wis. Stat. § 101.02)	To be filed	TBD
	Installation of fuel or lubricating oil storage tanks	Approval of plans and specifications (Wis. Stat. § 101.09)	To be filed	TBD
	Installation of dust filtering and HVAC equipment	Approval of plans and specifications (Wis. Stat. § 101.12)	To be filed	TBD
	Installation and registration of boilers, pressure vessels, and power piping	Machines and boilers, safety requirements (Wis. Stat. 101.17)	To be filed	TBD

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone #)
WisDOT[3]	Delivery of equipment to the construction site	Oversized Equipment Delivery Permit	To be filed	TBD
Wisconsin Historical Society	Site preparation and grading	Approval of archaeological surveys (Wis. Stat. § 44.40) and Section 106 Cultural Resources Clearance	To be filed with the WI Historical Society	TBD

[1]WPDES – Wisconsin Pollution Discharge Elimination System
[2]WDNR – Wisconsin Department of Natural Resources
[3]WisDOT – Wisconsin Department of Transportation

1.5.3 Local Permits and Approvals

Table 1-3 below provides a preliminary list of the local permits and regulatory approvals anticipated for the Project. Contact information for the agencies is provided in Volume II Appendix B. All permits listed below are anticipated to be applicable to the Preferred and Alternate Sites.

Table 1-3: Anticipated Local Permits and Approvals

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone Number)
Marathon County – Highway Department	Delivery of oversized or overweight equipment to the construction site	Single Trip Permit	TBD	TBD
Village of Kronenwetter	Excavate, fill, or place an object within Village rights-of-way	Permit to Excavate	TBD	TBD
	Build, structurally alter, relocate, or demolish a structure	Building Permit	TBD	TBD
	Move oversize or overweight vehicles or loads on Village roads	Single Trip Permit	TBD	TBD
	Install new water/sewer utility connection	Utility Connection Permit	TBD	TBD
Village of Rothschild	Move oversize or overweight vehicles or loads on Village roads	Single Trip Permit	TBD	TBD
	Impacts to wetlands or waterways within the shoreland-wetland zoning district	Shoreland-Wetland Zoning Permit	TBD	TBD

1.5.4 Railroad Facilities

The following sections provide location and owner of railroad facilities near the Project, as well as correspondence with railroad owners.

1.5.4.1 Location and Owner

A Canadian National rail line is located along the eastern boundary of the Weston Generating Station site and follows the Old Highway 51 corridor. This rail line is connected to the existing rail spur at the Weston Generating Station. No additional connections will be required by the Project. See Volume I Appendix I for a map showing the Sites in relation to the nearest railroads.

1.5.4.2 Railroad Correspondence

No railroads are affected by the Project.

1.5.5 Utility Pipelines

The natural gas requirements for the Project will be supplied through the existing ANRPL natural gas transmission pipeline system which feeds the pipeline system owned by WPSC located in the Village of Rothschild and on the Weston Generating Station site. No modifications to the ANRPL pipeline system will be required to serve the Project. Approximately 2,000 feet of 12-inch diameter pipeline would be installed from the existing gas conditioning station on the Weston Generating Station site to the Preferred Site and approximately 5,000 feet to the Alternate Site.

Service water and potable water will be provided by the existing water source on the Weston Generating Station site, which is the Village of Kronenwetter municipal water supply system. The interconnection to the water supply system will be located near the Facility at an existing header adjacent and northeast of the Preferred Site and approximately 3,000 feet north from the Alternate Site.

Sanitary wastewater from bathrooms, showers, and other employee areas will be collected and routed to the existing lift station, which discharges to the Village of Kronenwetter municipal sewer system for offsite treatment. The lift station is located approximately 600 feet northeast of the Preferred Site and approximately 3,000 feet north from the Alternate Site.

1.5.5.1 Utility Pipeline Owner

ANRPL owns the natural gas transmission pipeline that supplies fuel to the Weston Generating Station, which will also supply natural gas to the Project. The Village of Kronenwetter owns potable water pipelines and sewage pipelines near both Sites.

1.5.5.2 Utility Pipeline Correspondence

The existing pipeline agreements between Joint Applicants and ANRPL will not be altered for the Project initially. As firm pipeline transportation service is identified for the Project, pipeline agreements may be altered for the purpose of re-allocating firm capacity to the interconnection point that serves the Project.

1.6 General Schedule

The general schedule, including construction activities, is provided below.

1.6.1 Major Activities

The following list provides a general sequence of activities, including construction activities, for the Project.

- Engineering Plan Submitted 2/16/2021
- CPCN Submitted 4/16/2021
- CPCN Approval 12/31/2021
- Engines Delivered 11/30/2022
- Commercial Operation Date 5/31/2023

1.6.2 Seasonal or Regulatory Construction Constraints

According to WDNR NHI data, four active or inactive bald eagle nests have been recorded more than 1,000 feet outside of the Project area boundary, but within one mile of the Project boundary. If, in the future, a bald eagle nest is determined to be located on or immediately adjacent to the Project site and active during construction, human activity within 660 feet of the nest will be avoided from January 15 – July 30 per the U.S. Fish and Wildlife Service (USFWS) National Bald Eagle Management Guidelines (2007).

The Blanding's turtle, a special concern species, has suitable habitat located in the Project area according to NHI data. The Project will not impact wetlands or waterbodies, which are the primary habitats for this species. Joint Applicants will avoid work in suitable upland nesting habitat (sandy and/or well-drained soils) within 275 m (900 feet) of a wetland or water body during the Blanding's turtle's nesting period (May 20 – October 15). If avoidance is not possible, Joint Applicants will install and maintain exclusion fencing between October 16 and May 19 as per the WDNR Amphibian and Reptile Exclusion Fencing Protocol. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained to avoid impacts to this species.

1.6.3 Critical Path Items

No critical path items are associated with the Project.

1.6.4 Generation or Transmission Outage Constraints

Outages will need to be requested and coordinated with ATC. Verification of differential schemes should also be coordinated with outages.

1.7 Mailing Lists

The following sections provide information related to mailing lists used for the Project, their sources of information, library locations where the application will be sent for public review, and information on chief executive officers, regional planning commissions, and State and Federal agencies contacted for the Project.

1.7.1 Microsoft Excel Mailing Lists

See Volume II Appendix B for Mailing Lists for the Project for the public outreach efforts, which included property owners located within 0.5 mile of the Project.

1.7.2 Sources of Information

Joint Applicants created the mailing lists used to inform stakeholders of the Project.[1]. (See Section 6.7 for more information related to communication with the potentially affected public.) The parcel data was pulled from the Wisconsin Statewide Parcel database in January 2021. The mailing list is provided in Volume II Appendix B. The data for the Statewide Parcel Map Initiative is obtained from counties and cities, but potential inaccuracies in these data could occur due to the length of time between the initial data download and the submission of this application. Also, the Statewide Parcel Map Initiative states on its website that data was collected between January and June 2020; however, the tax roll year for most records is 2019 and this is the most current release (version 6.0.0). There may be new development or new landowners since the data were uploaded to the Statewide Parcel database. Maps in this application and lists of landowners use the parcel ownership information available in the statewide databases.

1.7.3 Library Locations

The CPCN application for the Project will be sent to the Marathon County Public Library headquarters and local branches and the University of Wisconsin – Stevens Point at Wausau. Mailing addresses for the libraries are provided in Table 1-4 below. This information can also be found in Volume II Appendix B (Table B-4).

[1] Due to COVID-19, Joint Applicants have not yet held an open house; however, an open house will be held in the coming weeks to provide the public an opportunity to learn more about and ask questions related to the Project.

Table 1-4: List of Library Locations

Library	Address
Marathon County Public Library – Rothschild Branch	211 Grand Avenue Rothschild, WI 54474
Marathon County Public Library – Mosinee Branch	123 Main Street Mosinee, WI 54455
Marathon County Public Library – Wausau Headquarters	300 N. First Street Wausau, WI 54403
University of Wisconsin – Stevens Point at Wausau	518 S. 7th Avenue Wausau, WI 54401

1.7.4 Mailing Lists

The following sections discuss property owners within 0.5 mile of the Project as well as public property owners; county, town, village, and municipal clerks and chief executive officers; regional planning commissions; and State and Federal agencies.

1.7.4.1 Property Owners

A list of all property owners within 0.5 mile of the Project is found in Volume II Appendix B (Table B-1).

1.7.4.2 Public Property Owners

A list of all public property owners within 0.5 mile of each Site is provided in Table 1-55. Further contact and mailing addresses are found in Volume II Appendix B (Table B-2).

Table 1-5: List of Public Property Owners within 0.5 Mile of Sites

Alternative	Public Property Owners within 0.5 Mile
Preferred Site	Rib Mountain Metropolitan Sewerage District
	Village of Kronenwetter
Alternate Site	Rib Mountain Metropolitan Sewerage District
	Village of Kronenwetter
	Wausau School District

1.7.4.3 Chief Executive Officers

A list of the chief executive officers of the applicable counties, towns, villages, or cities is provided in Table 1-66. Further contact and mailing addresses are found in Volume II Appendix B (Table B-3).

Table 1-6: Chief Executive Officers

Executive Officer	County, City, Village, or Town
Kurt Gibbs, County Board Chairman	Marathon County
Chris Voll, Board President	Village of Kronenwetter
George Peterson, Board President	Village of Rothschild
Steve Hagman, Chairman	Town of Mosinee
Allen Opall, Chairman	Town of Rib Mountain

1.7.4.4 Regional Planning Commission

The North Central Wisconsin Regional Planning Commission (NCWRPC) is a multi-county planning commission that serves Adams, Forest, Juneau, Langlade, Lincoln, Marathon, Oneida, Portage, Vilas, and Wood Counties. Contact information for the Executive Director is provided below.

Dennis Lawrence, Executive Director
210 McClellan St
Wausau, WI 54403
715-849-5510, Ext. 304

1.7.4.5 State and Federal Agencies

A list of the State and Federal agencies is provided in Table 7.1. Further contact and mailing addresses are found in Volume II Appendix B (Table B-5).

Table 1-7: State and Federal Agencies

Federal Agencies	State Agencies
U.S. Department of Transportation – Federal Aviation Administration	Wisconsin Department of Agriculture, Trade and Consumer Protection
U.S. Environmental Protection Agency	Wisconsin Department of Natural Resources
U.S. Fish and Wildlife Service	Wisconsin Department of Safety and Professional Services
U.S. Army Corps of Engineers	Wisconsin Department of Transportation, Bureau of Aeronautics
—	Wisconsin Historical Society
—	Public Service Commission of Wisconsin

1.8 Project Maps and Illustrations

Volume I of the appendices contains required maps, figures, diagrams, and illustrations. Volume III of the appendices includes confidential maps. The sections below identify the appropriate appendix for each map as well as additional description of the map, if necessary.

1.8.1 Aerial Photographs

See Volume I Appendix A for aerial photographs of the Sites.

1.8.2 Facilities Data

The following sections provide maps showing facilities data, such as the Sites; facilities and footprint; proposed utility connections; proposed access roads; and temporary laydown, storage areas, and construction areas.

1.8.2.1 Proposed Site Alternatives

See Volume I Appendix A for maps showing the Preferred and Alternate Sites.

1.8.2.2 Proposed Facilities and Footprint

See Volume I Appendix B for maps showing the proposed facilities and footprint.

1.8.2.3 Proposed Utility Connections

See Volume I Appendix H (Linear Infrastructure) for a map showing the proposed utility connections.

1.8.2.4 Proposed Access Roads

See Volume I Appendix B for maps showing permanent access roads.

1.8.2.5 Railroads Map

See Volume I Appendix I for maps showing the nearby railroads. Railroads onsite may be used for equipment deliveries during construction of the Project.

1.8.2.6 Proposed Temporary Laydown, Material Storage Areas, and Construction Parking Areas

See Volume I Appendix B (Site Arrangements) for maps showing the proposed temporary laydown, material storage areas, and construction parking areas.

1.8.3 Environmental Data

The following sections provide maps showing environmental data, such as the waterways, wetlands, soils, geology, rare species, topography, and floodplains.

1.8.3.1 Rivers, Lakes, and Other Waterways Map

See Volume I Appendix J for maps showing the location of rivers, lakes, and other waterways relative to the Sites. None are located within the Project boundary.

1.8.3.2 Outstanding or Exceptional Waterways, Trout Streams, or Wild or Scenic Rivers Map

See Volume I Appendix K for maps showing outstanding or exceptional waterways and trout streams relative to the Sites. The nearest Exceptional Resource Water (a stretch of Fourmile Creek) is approximately 6 miles west of the Project. The nearest Trout Stream is Black Creek, located approximately 3,000 feet west of the WPSC property boundary.

1.8.3.3 Wetland Maps

See Volume I Appendix L for maps containing field-delineated wetlands and Wisconsin wetland inventory wetlands relative to the Sites.

1.8.3.4 Soils and Hydric Soils Map

See Volume I Appendix E for maps containing soil information for the Sites.

1.8.3.5 Geology Map

See Volume I Appendix C for the geology map of the Sites.

1.8.3.6 NHI Rare Species - Confidential

See Volume III Appendix A (CONFIDENTIAL) for maps containing NHI rare species maps.

1.8.3.7 USGS Topographic Map

See Volume I Appendix D for the U.S. Geological Survey (USGS) topographic map of the Sites.

1.8.3.8 Floodplain Map

See Volume I Appendix M for Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) showing the location of floodplain relative to the Sites. The Preferred and Alternate Sites are not located within a100-year floodplain.

1.8.4 Parcel Data

The following sections provide maps showing parcel data, such as privately and publicly owned lands, tribal property, other types of property, and political subdivisions.

1.8.4.1 Privately Owned Parcels Map

See Volume I Appendix N for a map of privately owned lands near the Sites.

1.8.4.2 Public Properties Map

See Volume I Appendix O for a map of publicly owned lands near the Sites.

1.8.4.3 Tribal or Other Types of Property Map

No tribal properties or other types of property are located within 0.5 mile of the Sites.

1.8.4.4 Political Subdivision Boundaries Map

See Volume I Appendix P for a map showing political subdivision boundaries.

1.8.4.5 Township, Range, and Section Map

See Volume I Appendix Q for a map showing township, range, and section near the Sites.

1.8.5 Land Use

The following sections provide maps showing land use information (*e.g.*, land cover), zoning, active mines and quarries, schools and hospitals, airports, communication towers, and recreation areas and trails.

1.8.5.1 Land Use and Land Cover Map

See Volume I Appendix F for a map showing land use and land cover near the Sites.

1.8.5.2 Zoning Map

See Volume I Appendix R for a map showing zoning within 0.5 mile of the Sites.

1.8.5.3 Active Mines and Quarries Map

No active mines or quarries are located within 0.5 mile of the Sites.

1.8.5.4 Sensitive Sites Map

No sensitive sites (*e.g.,* daycare centers, schools, hospitals) are located within 0.5 mile of the Sites.

1.8.5.5 Airports and Airstrips Map

See Volume I Appendix T for a map showing airports and airstrips near the Sites. The closest public use airports to the Sites are the Central Wisconsin Airport, located approximately 5.2 miles to the south, and the Wausau Downtown Airport, located approximately 5 miles to the north. The closest private airstrips, Valhalla and Jaks Field, are located approximately 5.2 miles west and 6.3 miles southeast of the Sites, respectively.

1.8.5.6 Communication Tower Map

See Volume I Appendix U for a map showing communication towers near the Sites.

1.8.5.7 Recreation Areas and Trials Map

See Volume I Appendix V for a map showing recreation areas and trails near the Sites.

1.8.6 Utility/Infrastructure Data

The following sections provide maps showing utility and infrastructure data, such as existing transmission lines, pipelines, distribution lines, transportation infrastructure, railroads, and applicable rights-of-way.

1.8.6.1 Existing Transmission, Pipelines, and Other Applicable Infrastructure

See Volume I Appendix H for a map showing existing transmission lines, pipelines, and other infrastructure near the Sites.

1.8.6.2 Existing Distribution Lines to be Modified or Relocated

No existing distribution lines will be modified or relocated due to the proposed Project.

1.8.6.3 Roads, Highways, and Interstates

See Volume I Appendix W for a map showing existing roads, highways, and interstates near the Sites.

1.8.6.4 Railroad Map

See Volume I Appendix I for a map showing railroads near the Sites.

1.8.6.5 Applicable Infrastructure ROWs

There are no changes to offsite infrastructure for the Project. The approximate location of onsite linear infrastructure corridors is provided Volume I Appendix H. No rights-of-way are represented on the figure because the linear infrastructure corridors are contained within the Weston Generating Station Site Boundary.

1.9 ESRI ArcGIS Data Files

See Volume II Appendix C. Electronic data are provided under separate cover.

1.9.1 ESRI ArcGIS Version

ESRI ArcGIS Version 10.8 was used to create maps and information submitted in this application.

1.9.2 GIS Files

See Volume II Appendix C for a spreadsheet listing each geographic information system (GIS) file, a description of the data, data source, and date when the data was generated or collected in the field.

2.0 PROJECT NEED ANALYSES

2.1 Project Need

Joint Applicants are leading Wisconsin's transition to a clean energy future by developing a clean energy blueprint to reduce carbon emissions 70% relative to 2005 levels. As part of their Generation Reshaping Plan, Joint Applicants plan to retire over 1,800 MW of older, less efficient fossil-fuel generation within the next few years, starting in 2023, and build 1,500 MW of renewable generation and battery storage. This Project provides additional capacity, base load, and peaking generation Joint Applicants will need at the lowest cost, and also provides additional benefits such as ramping, dynamic voltage control, system inertia, and frequency response necessary for electric system stability. It is the proven solution that will assist the Joint Applicants' transition to clean energy. Given the change in Joint Applicants' portfolio, developing the right mix of generation resources across all hours of the load profile is vital to ensure reliability.

2.1.1 Portfolio Need – Dispatchable Resources

As the industry reshapes supply portfolios and demand net of intermittent supply and storage becomes flat, continuous supply facilities are required. Continuous supply facilities will require a combination of the following resources; resources with a dependable fuel source, over-built renewable resources, and long-term energy storage.

The foremost objective of supply planning is to always meet customer demand. Historically, thermal, dispatchable resources were the primary resource relied on to achieve this goal. The reality that the supply fleet is ageing, carbon dioxide (CO_2) emissions need to be reduced, and that new cost-competitive supply technologies are emerging, means an increased diversification of supply resources with very different production profiles is necessary.

The leading five resource options have very different profiles and are outlined below (Table 2-1):

Table 2-1: Energy Resource Options

Resource Type	Annual Energy Production (Capacity Factor)	Energy Production During Peak Demand	Flexibility	Predictability	Long Duration	CO_2 Production
Wind	35% to 45%	Very Poor (Summer) / Poor (Winter)	Curtailment only	Poor	Poor	None

Resource Type	Annual Energy Production (Capacity Factor)	Energy Production During Peak Demand	Flexibility	Predictability	Long Duration	CO_2 Production
Solar	23% to 25%	Good (Summer) / None (Winter)	Curtailment only	Good	None	None
Lithium BESS[A]	Net load	Very good	Very Good	Very good	None	Dependent on charge energy
Natural gas (CC)[B]	up to 90%	Very good	Good	Very good	Very good	Low
Natural gas (RICE)[C]	up to 90%	Very Good	Very Good	Very Good	Very Good	Low

[A] BESS – battery energy storage system
[B] CC – combined cycle
[C] RICE – reciprocating internal combustion engine

The resources above can be summarized as follows:

- **Wind:** a very good zero CO_2 resource that can offset other resource production when available; not a dependable resource to meet peak demand.
- **Solar:** a good zero CO_2 resource that can offset other resource production when available and is coincident with peak summer loads.
- **Lithium Battery Energy Storage System (BESS):** a very flexible resource that is very good at meeting peak energy demand; is able to move energy production from zero CO_2 resources to the time of greatest need.
- **Natural Gas (CC & RICE):** very good resources to meet all supply needs with low CO_2 production; able to produce energy continuously under all conditions.

Joint Applicants' objective is to always meet customer demand, so the remainder of this analysis is limited to Solar, Lithium BESS, and Natural Gas. Although wind will likely contribute some energy during peak load periods, it is unpredictable and is reasonably excluded from the discussion below.

Solar production has a high contribution to providing energy during peak summer hours (Figure 2-1). Because Wisconsin has a summer load peaking profile, solar facilities provide an excellent production profile that is highly coincident with peak customer demand. Solar production is not as beneficial during winter peak hours since winter peaks occur after sunset (Figure 2-2). However, Wisconsin winter peaks

have a considerably lower peak level of demand so production from solar during winter peaks is not as critical.

Figure 2-1: Summer Profiles

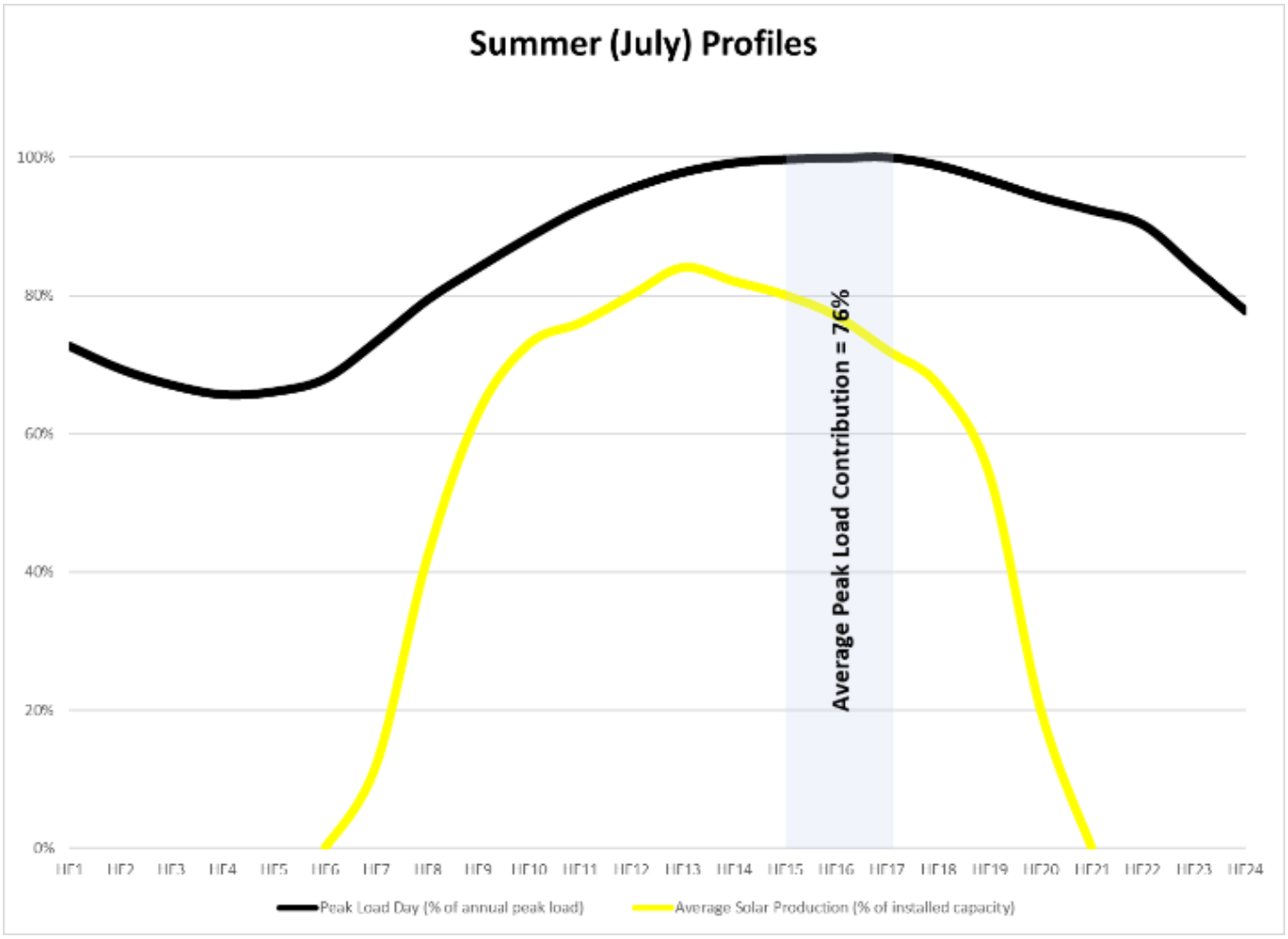
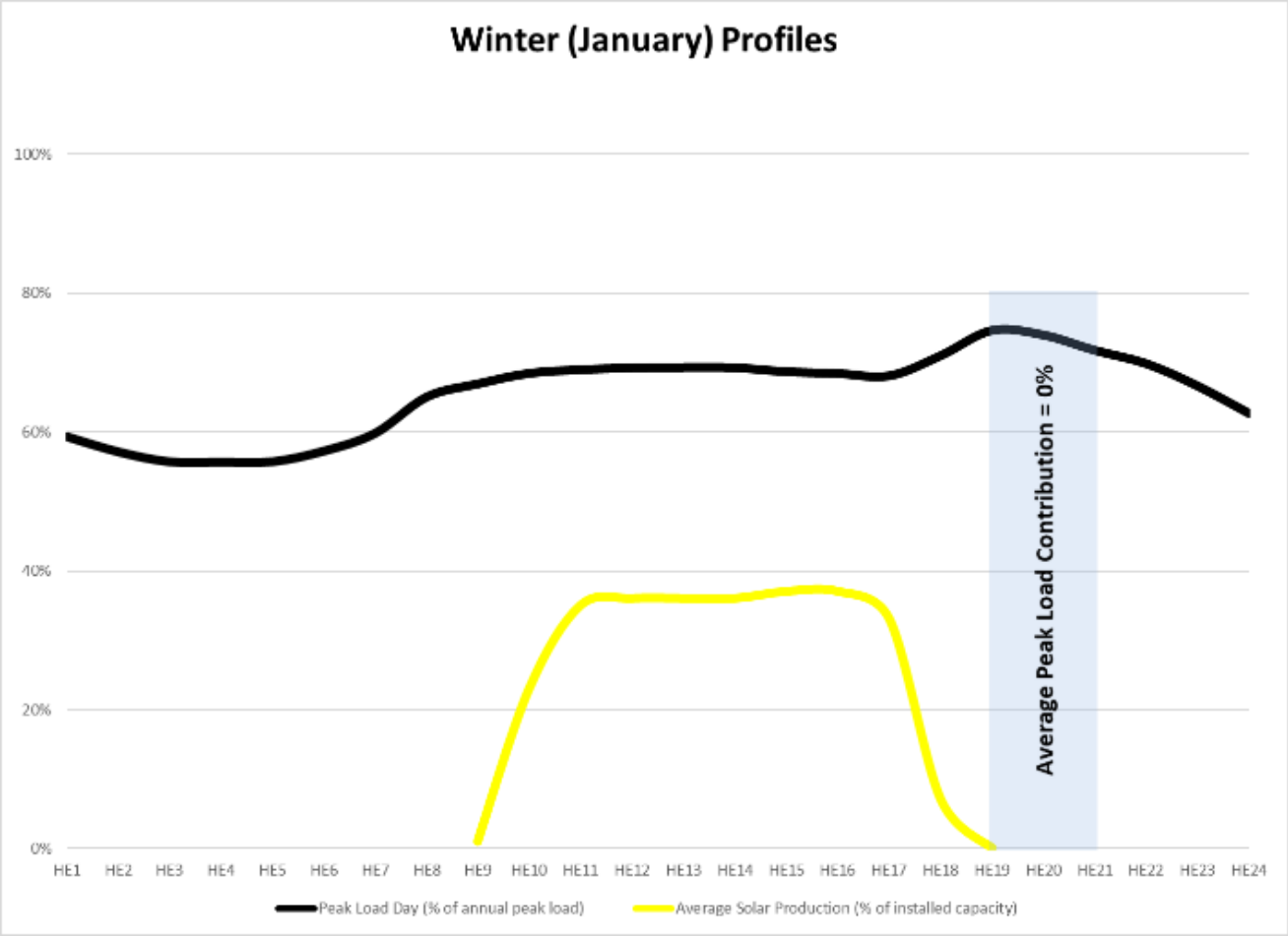


Figure 2-2: Winter Profiles



Figures 2-1 and 2-2 show that a significant amount of solar can be installed to supply annual (summer) peak demand. But as the amount of solar resources in Wisconsin and the Midwest ISO footprint increases, efficient dispatchable resources such as RICE will need to be added to address the net solar peak demand (demand less solar production). These net solar peaks are short lived and can be addressed by installing short duration (4 hour) lithium BESS. The resulting net solar and storage peak demands become flatter as more solar and storage is installed. A representative example would be a scenario where solar facilities are installed equal to 20% of annual peak demand and lithium BESS is installed equal to 10% of annual peak demand (Figure 2-3 and Figure 2-4). To provide the energy needed to meet peak day demands, firm, dispatchable electric generating capacity is required.

Figure 2-3: Summer Peak Day

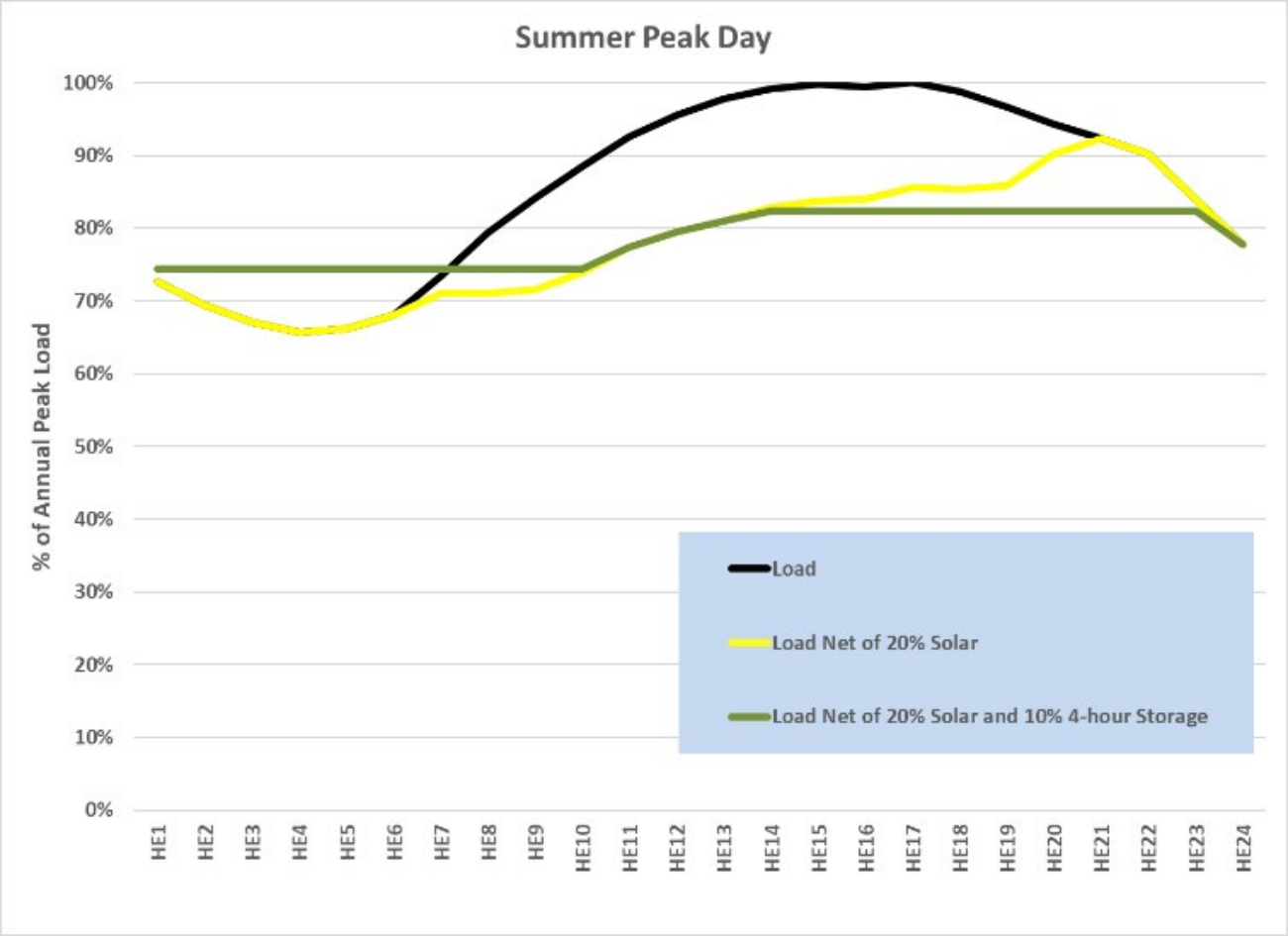
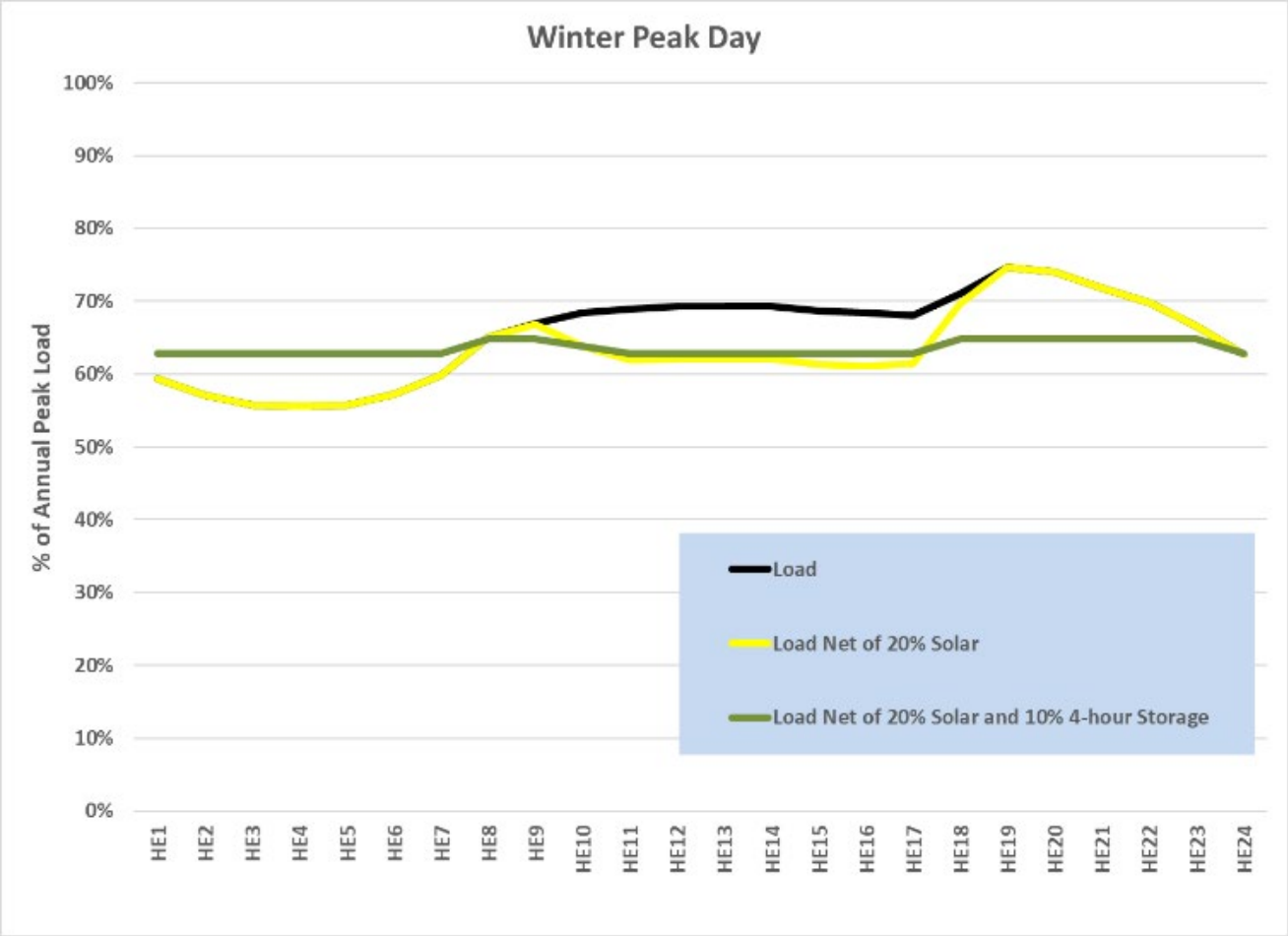


Figure 2-4: Winter Peak Day



In the above figures, solar production is the difference between the load (black line) and the load net of solar (yellow line). Similarly, the BESS injection and charge is the difference between the load net of solar (yellow line) and the load net of solar and storage (green line).

The illustrative point is that the load net of solar and storage has become flat. To provide the energy needed to meet peak day demands, facilities capable of continuous supply are required.

To provide continuous production of energy with solar and storage, daily energy and production, charging losses, and inverter capability must be considered. Table 2-2 outlines the solar and storage requirements to maintain 1MW of supply for 24-hours based on an average monthly solar production profile.

Table 2-2: Energy Resource Options

	Summer (July)	Winter (December)
Installed MW of Solar to Produce 24 MWh/day	2.9 MW	10.3 MW
Required Storage to Maintain ≥ 1-MW Continuous Supply	2.8 MW/11.2 MWh (4-hour) OR 1.1/11.2 MWh (10-hour)	4.0 MW/16.0 MWh (4-hour) OR 2.0 MW/16.0 MWh (8-hour)

It is clear from Table 2-2 that the alternative to 1 MW of a high-efficiency natural gas resource would be, under currently robust technologies, an installation of at least 5.7 MW of solar (2.9 MW)and storage (2.8 MW). Said another way, once 30% peak demand is met by solar (20%) and storage (10%), in order to have an equivalent amount of continuous supply that the RICE facility can provide, under mature technologies, over 700 MW of solar and storage would have to be installed, which is cost prohibitive relative to this Project.

In summary, as the industry reshapes their supply portfolios and demand net of intermittent supply and storage becomes flat, continuous supply facilities are required. Continuous supply facilities will require a combination of the following resources: resources with a dependable fuel source, renewable resources, and long-term energy storage.

Finally, under Wis. Stat. 196.491(3)(d)," the Commission shall approve an application… only if the commission determines all of the following:

-The proposed facility satisfies the reasonable needs of the public for an adequate supply of electric energy.

-The design and location or route is in the public interest considering alternative sources of supply, alternative locations or routes, individual hardships, engineering, economic, safety, reliability and environmental factors…"

As demonstrated in this application and a part of Joint Applicants' Generation Reshaping Plan, the RICE units meet these statutory requirements.

2.1.2 Dispatchable Resources – Why RICE?

The proposed RICE electric generation technology is particularly well-suited as an efficient, scalable long-term generation solution for both WEPCO's and WPSC's portfolios, especially when located at the

Weston site. RICE generation is a mature technology with which WEC Energy Group (WEC) has experience. Upper Michigan Energy Resources Corporation (UMERC), part of the WEC family, recently constructed and now operates two RICE facilities in its service territory that have been in service for just under 2 years. Our Weston site proposal will install an almost identical design and operational profile of the same seven-unit (128 MW) design currently operating as the F.D. Kuester Plant within UMERC's service territory in the Upper Peninsula of Michigan. Re-deploying that proven design will offer savings by minimizing engineering costs. In addition, the WEC family has experience in operations and maintenance as well as dispatch of RICE generating units into the MISO market.

From a physical standpoint one of the more significant advantages of RICE over other fully dispatchable technologies is its flexibility. With multiple units of smaller sizes, RICE electric generation can be operated to fit the electric load demand more precisely and efficiently, especially when the resource portfolio includes more intermittent resources like solar and wind. RICE compliments the intermittent availability of wind and solar resources with fast start-up and ramping capabilities, which allows grid operators to deal with sudden decreases in wind or solar intensity.

RICE technology has matured and can now support utility-scale electric generation applications that are as reliable and efficient as other natural gas-fired electric generating technologies. A key advantage of RICE over other technologies is scalability and efficiency. With unit sizes of 18-20 MW, a RICE electric generation facility can be sized to fit the load to be served more precisely. This scalability and economies of scale reduce the upfront capital cost, while providing Joint Applicants' customers with the same level of efficiency and reliability as they would receive from a larger facility. Because of the modular characteristics of a RICE facility, adding more units is relatively straightforward and comes in smaller increments than combustion turbines (CTs) or combined cycle (CC) units.

Adding RICE generation will enhance the reliability and resilience of Wisconsin's electric generation fleet. . The proposed multi-unit, fast-starting RICE generation is dispatchable, synchronous generation that will provide capacity, ramping, dynamic voltage control, system inertia, and frequency response necessary for electric system stability. In addition, it is capable of supporting system restoration by facilitating prompt recovery from partial or complete collapse of the electric system.

Utility-scale RICE generators have better full-load heat rates than gas turbines operating in simple cycle configurations, as well as traditional fossil-fueled steam generating plants (8,500 vs 10,000 British thermal units per kilowatt-hour (Btu/kWh). According to the Energy Information Administration (EIA), the heat rate of RICE is 9.1% more efficient than an aero derivative CT and 16.3% more efficient than an

industrial frame CT. (Cost and Performance Characteristics of New Generating Technologies, *Annual Energy Outlook 2021*, available at: https://www.eia.gov/outlooks/aeo/assumptions/pdf/table_8.2.pdf. This benefit is even more pronounced at partial-load operation. There are two ways for a multi-unit RICE plant to achieve 50% plant load. First, half the plant can be operated at full load, which will essentially maintain the full-load heat rate, depending on the auxiliary loads still running. Second, if all reciprocating engines are ramped down to 50% load simultaneously, the resultant net heat rate is still competitive with the full-load heat rate of a gas turbine.

In comparison to gas turbine technologies, RICE units have better availability and startup reliability Availability generally refers to the percentage of time a unit is available for operation. RICE units typically exhibit availability factors of 90 - 95% or better, with approximately 99% start reliability. In addition, because the Project will have multiple engines at a given location, maintenance outages can be staggered to avoid taking the entire plant offline. Similarly, an unplanned outage event for a single unit will not force the entire Facility offline.

Reciprocating engines also have the capability start up and ramp load more quickly than most gas turbines and can be designed to accommodate start times under 10 minutes. In addition, reciprocating engines are generally more tolerant of altitude and ambient temperature than gas turbines. With site conditions below 3,000 feet and 95 °F, altitude and ambient temperature have minimal impact on the electrical output of reciprocating engines, though the efficiency may be slightly affected.

2.1.3 RICE Technology – Why Weston?

The Weston site provides a significant advantage over other locations for two primary reasons. First, replacing generation at an existing site with Interconnection Service allows Joint Applicants to follow MISO's Generating Facility Replacement Process instead of the new Generator Interconnection Process. MISO is currently averaging over two years to complete the new Generator Interconnection Process in the ATC footprint with some cycles taking as long as two and a half years. MISO's Generation Facility Replacement Process allows a generation owner to replace existing generation with a new generation of equal or lesser MW output at the same point of interconnection. The expectation is that the replacement generation will not cause an adverse material impact to the existing transmission infrastructure, therefore the process is expected to take less than 1 year to complete and likely less than six months. In addition, the Generating Facility Replacement Process will have cost savings to customers as the deposit payments are far less than the new Generation Interconnection Process.

In addition, selecting an existing site minimizes network transmission and affected system upgrades as the existing transmission infrastructure will be used for the replacement generation, saving customers the expense of costly transmission infrastructure investments. As noted in Section 3.7.2, Joint Applicants expect the Project will use the transmission infrastructure already in place for Weston 2, 31 and 32, which will each cease commercial operation before the Project is operational, without the need for new network upgrades. Locating the Project at the Weston site will also maintain support for the 115 kV system that is currently provided by Weston 2, 31 and 32. Although the 115 kV system in the area is relatively strong because of its connection to the 345-kV system, there are times when generation on the 115 kV system provides support, such as removing transmission or generation from service for maintenance.

Lastly, the Weston site offers the ability to take advantage of an existing brownfield site. Given the proximity and availability of existing infrastructure, such as transmission interconnection, water and gas, costs will also be minimized. Construction and operations of these units at the Weston site also offers the opportunity to minimize impacts to natural resources or local residents. In addition, efficiencies associated with security and human resources can be realized by placing the RICE units at an existing secured, manned site with 24/7 staff which has existing operations staff and systems.

2.2 Annual Peak Demand and Total Energy Forecast

The forecasted demand and energy for Joint Applicants includes all firm and non-firm wholesale and retail load obligations plus all firm sales transactions measured at the transmission system. Conservatively, the forecast assumes all firm wholesale contracts are not extended upon expiration of the existing contract. The annual demand and energy forecasts used for expansion planning in PLEXOS market simulation software (PLEXOS), which is based on installed capacity, is provided in Volume III Appendix B (CONFIDENTIAL). Joint Applicants' capacity positions using MISO's 2021 planning reserve auction inputs and assumptions, before and after the GRP unit additions, from planning year 2021 through 2035 are included in Volume III Appendix C (CONFIDENTIAL), Figures 4, 5, 7 and 8.

2.3 PLEXOS Long-Term Capacity Expansion Model

Joint Applicants used Energy Exemplar's PLEXOS to evaluate each utility's optimal long-term GRP. The PLEXOS model provides the most robust model functionality and is a proven power market simulation tool that is a leader in modeling flexibility, efficiency, simulation alternatives and advanced analysis.

PLEXOS is a comprehensive production cost model with regional databases for conducting capacity expansion planning and is used by over 280 customers with utilities being the largest customer base.[2] The model provides the capability to solve the capacity expansion problem simultaneously with commitment and dispatch. PLEXOS also accounts for all types of generation and storage resource options during generation capacity expansion. This allows PLEXOS to build balanced portfolios of conventional, renewable and storage resources, which accounts for the delivery curves of price taking wind and solar generators.

PLEXOS allows Joint Applicants to forecast future generation portfolios and locational marginal prices (LMPs) across MISO; identify low-cost resource options to meet the Joint Applicants' future system needs; and simulate the dispatch, costs, and revenues of those portfolios as part of the MISO market. Because of the robustness of the modeling capabilities described above, PLEXOS was chosen by Joint Applicants as their long-term capacity expansion model to evaluate the economic value the GRP provides the Joint Applicants' customers.

The GRP plan identified that provides significant savings compared to status quo, i.e. no retirements with continued operations, and positions the Joint Applicants to meet their CO_2 goals is provided in Table 2-3.

Table 2-3: GRP Units

Replacement Source	Utility	Capacity		Timeframe
		ICAP	UCAP	
Solar	WEPCO	788	551	2023/2024
	WPSC	158	110	2023/2024
BESS	WEPCO	451	451	2023/2024
	WPSC	107	107	2023/2024
Wind	WEPCO	n/a	n/a	n/a
	WPSC	82	13	2022
Gas (RICE)	WEPCO	66	63	2023
	WPSC	66	63	2023
Gas (Riverside)	WEPCO	200	190	2023/2024
	WPSC	n/a	n/a	n/a
Total	WEPCO	**1,505**	**1,255**	2023/2024
	WPSC	**413**	**293**	2022/2024
	Combined	**1,918**	**1,548**	2022/2024

[2] Notable customers include AEP, Xcel Energy, Dominion, Southern California Edison, MISO, PJM, and California ISO.

2.3.1 Market Purchased Power

As MISO Market Participants, Joint Applicants actively participate in the Day-Ahead and Real-Time MISO Energy and Operating Reserve Markets (MISO DART) as well as the annual Planning Resource Auction conducted by MISO.

The MISO DART is a centralized market using a Security Constrained Unit Commitment/Security Constrained Economic Dispatch model to optimally meet energy needs based on the generation offers and demand bids of Market Participants. The operation of the MISO DART is simulated in PLEXOS to provide an indication of the expected economic operation of the RICE units. Joint Applicants are both located in MISO Planning Resource Zone 2, so Applicants used PLEXOS to model MISO DART pricing and dispatch for Zone 2. This was accomplished by uploading the three hourly market price profile scenarios provided by Energy Exemplar and Siemens for MISO Load Resource Zone 2, the hourly load profile of each utility, the transmission import/export limits of each utility, and the physical limitations of each utility's generators into PLEXOS. While respecting the hourly import/export limits of each utility and the physical limits of the generators, PLEXOS economically dispatched the generation portfolio of each utility against the Zone 2 market price. The resulting economic imports represented market purchases while the resulting economic exports represented market sales.

The 2020 OMS-MISO Survey Results indicate significant planned generation retirements and the likely need for new generation within Zone 2 in order to meet the Local Clearing Requirement for the "1 day in 10 year" Loss of Load Expectation Planning Standard. As such, Joint Applicants plan to meet the majority of their long-term capacity obligations with resources that are owned or under long term contract within Zone 2. The MISO Planning Resource Auction will be used to meet short-term gaps until new generation resources are acquired and to sell short-term capacity in excess of requirements due to the "lumpiness" associated with generation investments and retirements.

2.3.2 Facility Retirement Forecast

Table 2-1 below provides the forecasted generation retirements, including the expiration of an existing purchased power agreement (PPA), for Joint Applicants. Joint Applicants will continue to evaluate the economic and environmental attributes of the remainder of their existing fleet but no determination has been made regarding additional retirements beyond what is included in Table 2-4.

Table 2-4: Forecasted Retirements

Generating Units	Technology	Utility	Capacity		Retirement Date*
			ICAP	UCAP	
Oak Creek 5	Coal	WEPCO	[redacted]		5/31/2023
Oak Creek 6	Coal	WEPCO			5/31/2023
Oak Creek 7	Coal	WEPCO			5/31/2024
Oak Creek 8	Coal	WEPCO			5/31/2024
Columbia 1	Coal	WPSC			11/1/2023
Columbia 2	Coal	WPSC			11/1/2024
Weston 2	Gas (steam)	WPSC			5/31/2023
Weston 31	Gas (CT)	WPSC			5/31/2023
Weston 32	Gas (CT)	WPSC			5/31/2023
Marinette 31	Gas (CT)	WPSC			5/31/2023
Marinette 32	Gas (CT)	WPSC			5/31/2023
Whitewater**	CC (PPA)	WEPCO			5/31/2022
WEPCO Total			**1,323**	**1,138**	
WPSC Total			**528**	**494**	
Combined Total			**1,851**	**1,631**	

* Used for modeling purposes. Actual dates may vary.
** - Indicates a PPA and not a generating facility owned by either Joint Applicant

2.3.3 Consideration of Independent Power Producers

As described in Section 2.1, one of the major drivers of the need for RICE technology at Weston is to maintain and enhance reliability and resiliency while Joint Applicants reshape their respective portfolios with a significant increase in intermittent, carbon free resources. Although Joint Applicants consider and evaluate market alternatives, including proposals from Independent Power Producers, a PPA does not provide the level of control that ownership does while addressing reliability and resiliency of Joint Applicants' systems.

Utilities typically turn to a PPA when the purchasing entity is not able or willing to take on the operating risks associated with the facility and there is minimal market risk to the overall portfolio at the time the PPA expires. In general, Joint Applicants prefer asset ownership in situations where they have experience in operations of a facility or similar facilities, and where there is adequate means to mitigate risks outside their control. Ownership of the facility is generally preferable because it allows Joint Applicants the ability to manage O&M costs and increase the value of the unit in the marketplace. The ability to execute this optimization provides a competitive advantage for the Joint Applicants' customers. With the "in house" expertise that UMERC has with the two RICE facilities in the upper peninsula of Michigan, Joint Applicants believe the risks have been greatly reduced due to the following:

- Experience in the dispatch, operations and maintenance of the F.D. Kuester and A.J. Mihm facilities has provided valuable experience in managing the dispatch of RICE technology in the marketplace; and,
- Extensive experience operating and maintaining plant equipment similar to the equipment present at other gas-fired facilities.

2.3.4 Energy Efficiency and Conservation

The energy and demand forecast used to develop the need for this Project is based on historical trends, which includes energy efficiency and conservation. The Joint Applicants' long-range energy and demand forecast already includes cost-effective and technically feasible energy efficiency and conservation. The current levels of energy efficiency and conservation savings are implicitly included in the historical data used to develop Joint Applicants' energy and demand forecast. Load reduction, including conservation and energy efficiency, are not practical alternatives to 128 MW of new dispatchable generation. Load reduction of this magnitude is also not an option. Additionally, load reduction cannot provide the unique reliability and grid support characteristics of the Weston RICE units.

2.4 Alternative Analysis

Historically, changes in the electric portfolio were incremental, typically driven by an increase in demand for electricity. The business case was evaluated on a project-by-project basis to meet the demand, *i.e.* Project A versus Project B. However, recently, the increase in demand has become relatively modest year over year as market trends and policy have increased energy efficiency and demand side management on a macro level. The business case for new generation has shifted from being primarily driven by increases in demand to being driven by the need to replace older, less efficient, higher cost, and carbon-emitting resources. This has resulted in substantial changes across the energy industry and is causing the need to evaluate long-range decisions on a portfolio basis to make sound economic decisions, ensure reliability and resiliency, and ensure environmental responsibility.

The Project is part of the Joint Applicants' overall GRP that will provide significant economic savings for customers while ensuring reliability, resiliency, and environmental stewardship. WEC has established CO_2 emission reduction goals as part of its overall environmental strategy with a 55% reduction in CO_2 emissions as compared to 2005 emission levels by 2025 and 70% reduction in CO_2 emissions by 2030. The GRP is the Joint Applicants' first step in achieving these goals and will provide the foundation for meeting the 70% reduction level by 2030. As part of the GRP Joint Applicants will retire approximately 1,800 MW of generation, which includes a combined 1,385 MW of older, less efficient coal generation, 190 MW of end-of-life gas generation, and a 238-MW PPA that expires. The energy and capacity need

caused by these retirements will be met with a combination of low-cost renewable technology, BESS and highly-efficient natural gas technology. The Joint Applicants have determined the best approach to meet these goals is to evaluate the overall GRP against continued operation of their respective existing generation portfolios over the study period of 30 years.

The economic analysis evaluates the overall GRP against continued operation of Joint Applicants' respective existing generation portfolios over the planning period, with the exception of the older gas technology for WPSC. Joint Applicants used the PLEXOS model to economically dispatch the Joint Applicants' portfolios, optimize CO_2 emissions, and economically select new "Generic Units" to meet future capacity need in the future for both the GRP and Status Quo Alternative scenarios.

In the GRP scenario, the PLEXOS model was populated with the detailed unit characteristics and assumed in-service dates (2023/2024) for the GRP facilities, including the RICE project, as well as the planned existing unit retirements. In the Status Quo Alternative, the GRP units are not included in the modeling run and the existing units continued to operate throughout the study period.

Detailed descriptions of the assumptions, parameters, modeling and economic justification for the Project is located in Volume III Appendix B (CONFIDENTIAL).

2.4.1 Supply Alternatives

As previously mentioned, Joint Applicants are in the process of reshaping their respective portfolios to provide economic benefits to customers, maintain reliability and meet CO_2 emission reduction goals. As a result, the supply alternatives also need to address the entire portfolio. Since demand growth is not the major contributor to the need for new generation the alternative to the Joint Applicants' GRP is continuation of the existing portfolios, i.e., no retirements. With exception to WPSC's older, end-of-life gas fired generators, this would include continued operation of WEPCO's Oak Creek Coal Facility (Units 5-8), the extension of the Whitewater PPA, and WPSC's ownership share of the Columbia Coal Facility (Units 1-2).

A detailed description of the Supply Alternatives considered in the economic evaluation is located in Volume III Appendix B (CONFIDENTIAL).

2.4.2 Proposed Options Justification

The resources available to replace the older, less efficient fossil generation in serving Joint Applicants' load are natural gas or renewable/battery technologies. As noted in Appendix A, Joint Applicants arrived at an optimal mix given resource characteristics and availability to balance the environmental, economic

and market risks in the portfolio used to serve its load while ensuring reliability and resiliency meets the standards Joint Applicants' customers expect. As noted in Section 2.1, there is a need in the portfolio for a critical mass of dispatchable resources to effectively and economically serve load. In addition, as further noted in Section 2.1, RICE technology was the fully dispatchable option that offered the most economic, reliable and resilient source of generation.

2.4.3 Cogeneration Project

Currently, no cogeneration opportunity exists near the Weston location. Joint Applicants currently have 281 MW of cogeneration on their systems, comprised of natural gas and biomass-fired units. Joint Applicants will continue to consider reasonably priced cogeneration opportunities that would have economic, environmental, or other benefits for customers.

2.4.4 No-Build Alternative

A no-build alternative is not a viable alternative to the Project. The Project is an integral component of Joint Applicants' GRP that will provide energy, capacity, system support, reliability, and resiliency. The Project complements the intermittent renewable generation within Joint Applicants' resource portfolio and provides a physical and financial hedge against high capacity and energy prices within the market, especially during those times when intermittent resources are not producing electricity. A no-build alternative cannot meet these needs or provide these benefits, nor does it provide a hedge against market prices. A no-build alternative will expose customers to potentially substantial and unpredictable risks as the MISO region continues to replace traditional generation resources with intermittent resources.

Within the MISO stakeholder process, the Resource Adequacy Subcommittee is heavily engaged in an initiative to transition the resource adequacy construct from an annual to a seasonal perspective. Traditionally, the resource adequacy construct established generation reserve margin requirements based on the summer peak load. This approach assumes that generation resources available in the summer are generally during the non-summertime periods. However, as the MISO generation resource portfolio shifts to larger amounts of intermittent resources such as wind and solar, it is no longer appropriate to assume those resources are equally available throughout the year. Intermittent resources have different capabilities in different seasons and transitioning to a seasonal resource adequacy construct allows the proper identification and accounting for those different seasonal capabilities. The Project complements the seasonal variability of intermittent resources and provides Joint Applicants' and their customers with more financial certainty than a no-build alternative within a seasonal resource adequacy construct.

2.4.5 Load Reduction

See Section 2.1.6 for the discussion on load reduction (conservation and energy efficiency) as an alternative.

2.4.6 Cost-Effectiveness, Technical Feasibility, and Environmental Soundness Analyses

Joint Applicants have developed a comprehensive generation reshaping plan over the next 5 years that provides significant savings to ratepayers, is technically feasible, and provides significant environmental benefits. RICE is an integral component of Joint Applicants' GRP that will provide system support, reliability and resiliency, and complements 1,028 MWs of new intermittent renewable generation in Joint Applicants' portfolio. The inclusion of RICE in Joint Applicants' overall GRP meets Joint Applicants' energy and capacity needs in accordance with Wisconsin's energy priorities in Wis. Stat. §§ 1.12(4) and 196.025(1)(ar).

2.4.6.1 Noncombustible renewable energy resources

The noncombustible renewable technologies included in the analysis consist of wind and solar facilities. As shown above in Table 2-1, the GRP includes 946 MW of solar capacity (Joint Applicants) and 82 MW of wind capacity (WPSC) in the next five years as a replacement to older, less efficient combustible technology. Over the remainder of the study period an additional 4,500 MW of solar and BESS capacity will be added to WEPCO's portfolio to replace capacity associated with the expiration of a PPA contract. Additional detail of the economic analysis can be found in Volume III Appendix B (CONFIDENTIAL).

2.4.6.2 Combustible renewable energy resources

Using the most current cost and performance characteristics of new electric generating facilities from EIA's 2021 Annual Energy Outlook, the table below indicates the significant cost effectiveness of RICE compared to biomass. As a result, Joint Applicants did not further consider Biomass as a cost-effective alternative.

Table 2-5: Annual Energy Outlook Generic Unit Cost and Performance Comparison

Technology Compare	Lead Time	Capital Cost	Variable O&M	Fixed O&M	Heat Rate
	Years	$/kW	$/MWh	$/kW-yr	Btu/kWh
Internal combustion engine (RICE)	2	1,813	5.72	35.3	8,295
Biomass	4	4,078	4.85	126.4	13,500
Delta	2	**2,265**	**(0.87)**	**91.0**	**5,205**

2.4.6.3 Nonrenewable combustible energy resources in the following order listed:

2.4.6.3.1 Natural gas

The only nonrenewable combustible energy resource in Joint Applicants' GRP is their ownership share of RICE and the 200 MW option on the Riverside Combined Cycle facility. No additional nonrenewable energy resources were selected as part of the low-cost plan after the GRP units identified.

2.4.6.3.2 Oil or coal with sulfur content of less than 1 percent

Oil and coal units with a sulfur content of less than 1 percent were not considered in the analysis.

2.4.6.3.3 All other carbon-based fuels.

Additional carbon-based fuel sources were not considered in the analysis.

2.5 Wholesale Market Competition

To issue a CPCN for new generation facilities, the Commission must find that the facilities "will not have a material adverse impact on competition in the relevant electric wholesale market" Wis. Stat. § 196.491(3)(d)7). The Project will interconnect and operate within the wholesale electricity market administered by MISO. MISO commits and dispatches generation to serve load on an unbiased, least-cost basis through a centrally-dispatched security-constrained energy market. Offers from generation owners and bids from Load Serving Entities within MISO's energy market are closely monitored by an Independent Market Monitor (IMM) who is responsible for the identification and mitigation of market power abuses. Module D of the MISO Tariff contains the Market Monitoring and Mitigation Measures used by the IMM to provide fair, equitable and non-discriminatory access to the MISO energy market. The Market Mitigation Measures provide the means for MISO to mitigate the market effects of any conduct that may distort competitive outcomes in the Markets and Services administered by MISO.

The Project will interconnect to the transmission system owned by ATC. Fair and equitable access to ATC's transmission system is provided through the MISO Tariff and subject to the functional control of MISO. The Weston RICE units will interconnect to ATC's transmission system and operate under the functional supervision of MISO and the IMM through the open-access and energy market provisions of the MISO Tariff. As such, the Project will not have a material adverse impact on competition within the relevant electric wholesale market of MISO.

2.6 Excess Heat or Steam Energy

Not applicable for this technology.

3.0 PROJECT ENGINEERING

The following sections provide detailed information related to the proposed Facility operations.

3.1 Facilities

The following sections describe the type of power facility proposed; any proposed additions, expansions, or modifications; expected hours of operation and capacity; physical dimensions; etc.

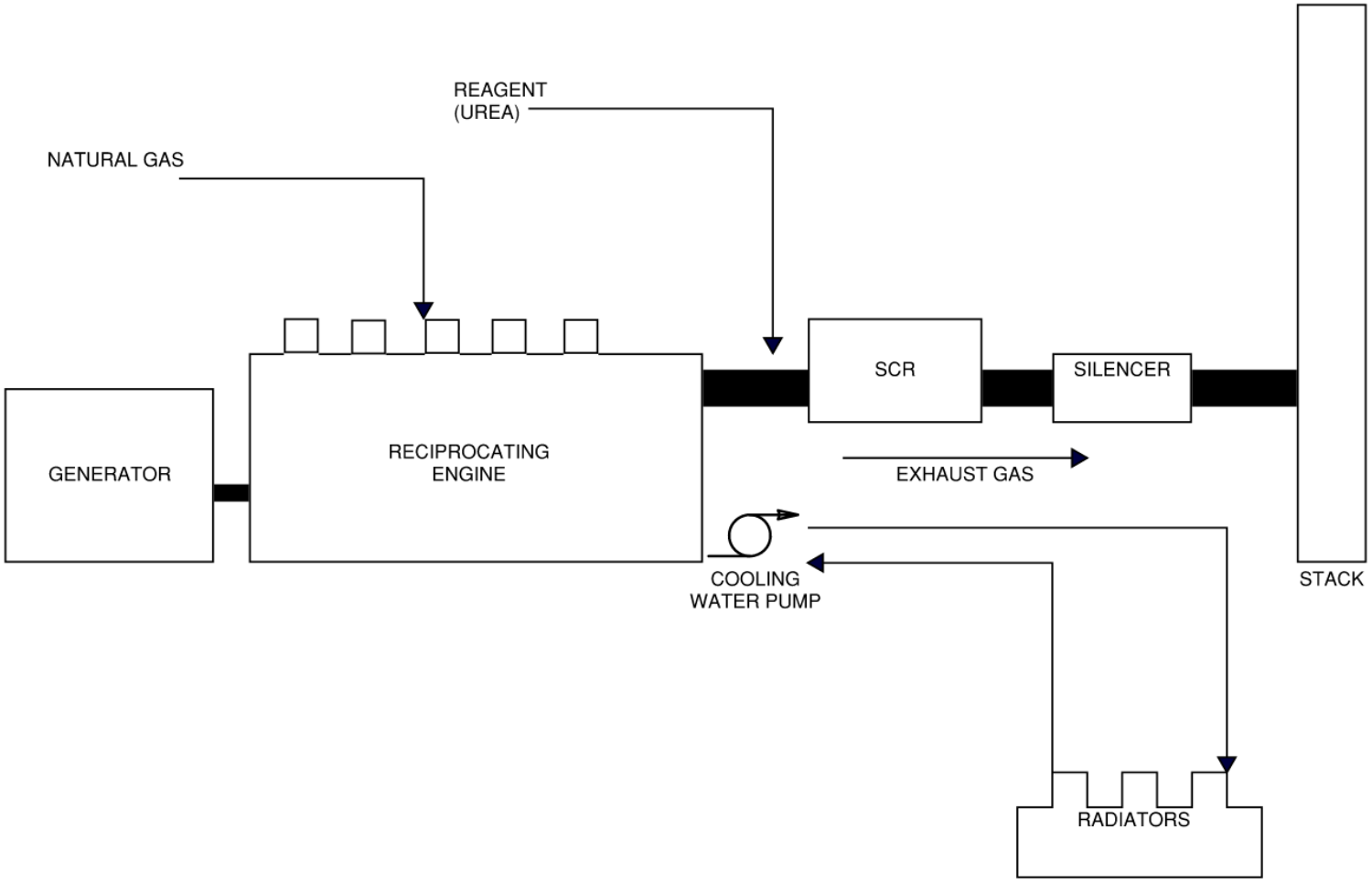
3.1.1 Type of Power Facility Proposed

Details of the proposed Facility are discussed in the following sections.

3.1.1.1 Description of Proposed Technology

The Project will install a new electric generating unit comprised of seven Wärtsilä W18V50SG RICE generators. Each RICE generator will have nominal capacity of 18.8 MW. The Facility is designed for continuous service. However Joint Applicants anticipate it will be primarily available at all times of the year for peaking service. Figure 3-1 provides a schematic of the overall RICE generating process.

Figure 3-1: Overall Facility Process



Source: Burns & McDonnell, 2021

3.1.1.2 Major Power Generation Equipment

The following sections describe the major equipment that will be used for the Facility.

3.1.1.2.1 RICE Generators

The Facility will have a 128-MW electric generating unit consisting of seven spark-ignited RICE-driven electric generators fueled by natural gas. Each RICE unit operates on a four-stroke cycle to convert pressure into rotational energy. Spark ignition of the natural gas fuel in the engine cylinders ignites the natural gas which produces pressure in the engine cylinders. The engine's drive shaft turns the attached electric generator to produce electricity. These are heavy duty engines that can be started and stopped (*i.e.,* cycled) quickly and can easily adapt to grid-load variations. The engines operate at constant speeds around 500 revolutions per minute.

The engines will be housed indoors in a new engine hall building. The exhaust system for each RICE unit will be located outside the engine hall building. After passing through the emission control system and silencers (mufflers), the individual engine exhaust will be ducted to an exhaust stack.

The Facility could be operated as both a base load and peaking plant.

3.1.1.2.2 Emergency Start Generator

The Facility will include one natural gas-fired emergency start generator (ESG). The ESG will auto-start and pick up Facility loads if the Facility loses power. The ESG specification will include protective relaying typical for a small generator interconnected to a utility power system.

The ESG will be started using an integral battery system, sized and rated for the Facility. ESG primary control will be contained within the ESG itself.

3.1.1.3 Major Systems

The following sections describe the major systems associated with the Facility.

3.1.1.3.1 Fuel Supply System

The Facility will burn natural gas without the capability to use a backup fuel. New facilities for the natural gas infrastructure will include a new pipeline routed on the Weston Power Station site from a nearby existing gas conditioning station on the site. The approximate location of the natural gas tie-in is shown on Volume I Appendix H (Linear Infrastructure Map).

The fuel gas supply and conditioning equipment will include overpressure protection, coalescing filters to remove any particulate matter (PM) and water droplets from the fuel, and dew point heaters; all to maintain the desired fuel requirements of the engine. The equipment for fuel gas supply will use existing piping and equipment when possible; however, new piping and equipment will also be required for the Project.

3.1.1.3.2 Engine Cooling System

Engine cooling will be provided by a closed loop system. The system circulates coolant through the engine, then through a forced air-cooled radiator bank, then back to the engine to complete the cycle. The closed loop cooling system consumes a minimal amount of water, typically two gallons per engine per week. The radiator bank is sized to accommodate all the RICE generator sets operating at design conditions. A diagram of the water use is provided in Figure 3-2 and represents the water balance at maximum load.

Cooling water is circulated through the engine block and cylinder jackets for cooling, and engines are equipped with a plate and frame cooling water-to-lube oil heat exchanger for the cooling of lube oil.

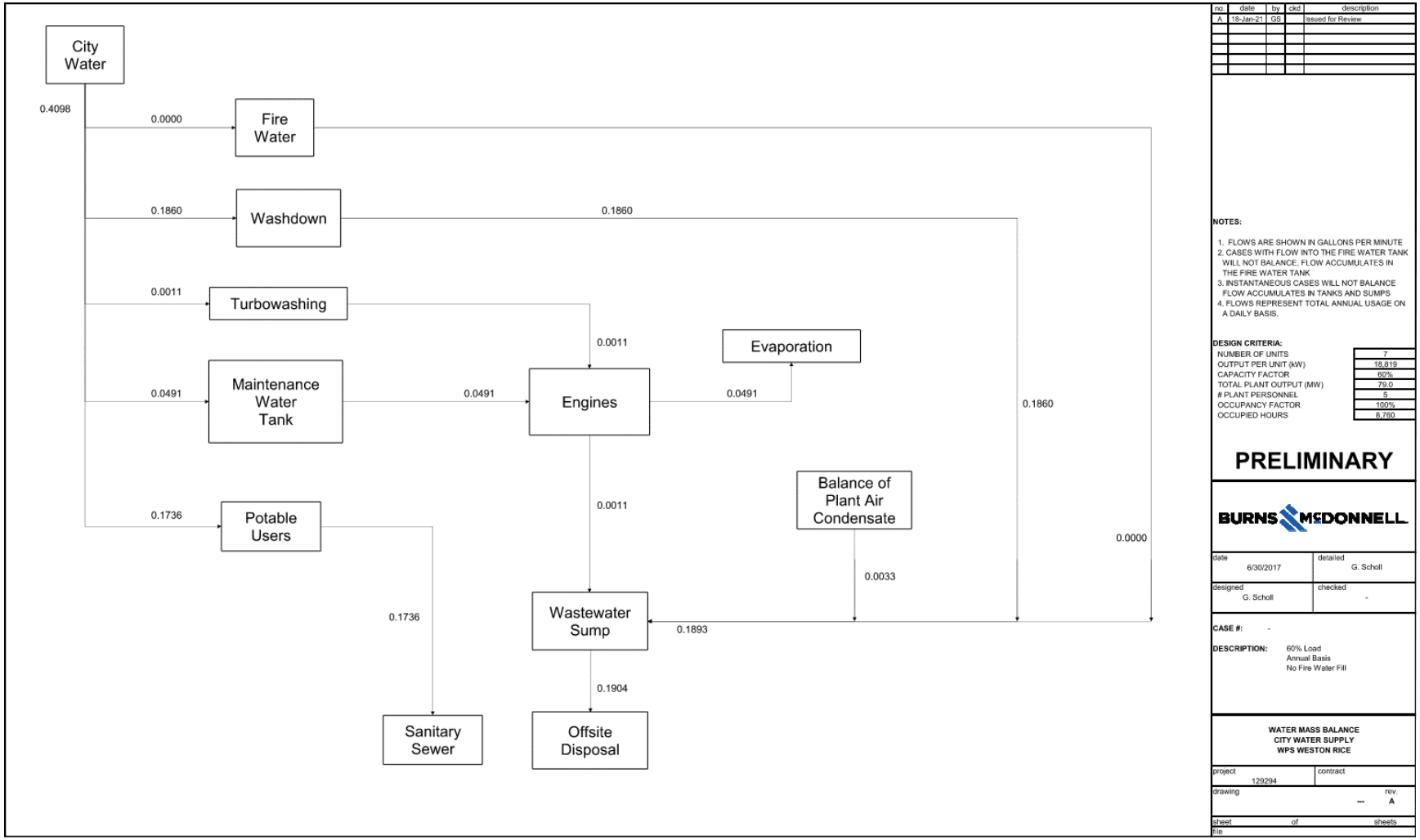
3.1.1.3.3 Compressed Air System

Compressed air systems will be used for engine startup and instrument air. The engines are started by injecting compressed air into the engine cylinders to initiate rotation. Once sufficient engine rotation is achieved, the natural gas fuel/air mixture is introduced; a spark plug ignites the mixture; and the engine accelerates to operating speed.

A separate instrument air system is made up of air compressors and receivers to provide service to various control and protection devices. The compressors will control motor starting and capacity output locally based on an input from the system header pressure. The compressors will automatically start and stop as needed.

Starting air supply will be from high-pressure air compressors. The compressors will be selected based on the total capacity, pressure, and quality requirements for the starting air as specified by the generating set supplier. The system will be complete with compressor inlet filters, after cooler, pressure dampening, air receiver tanks, controls, automatic condensate traps, piping, and valves. The compressors will be sized to refill the starting air receiver capacity within approximately 1 hour from the minimum to maximum system requirement as specified by the generating set supplier. The starting air compressors will be equipped with single-speed motors.

Figure 3-2: Water Balance at Maximum Load



3.1.1.3.4 Exhaust and Emission Control System

The engine exhaust system includes emissions control system components, silencers, and an exhaust stack for all seven RICE units. The configuration and height of the stacks will be determined based on air dispersion models. Each RICE unit has an air emission control system including selective catalytic reduction (SCR) using urea to control nitrogen oxide (NOx) emissions, and an oxidation catalyst to control carbon monoxide (CO), volatile organic compounds (VOCs), and hazardous air pollutants. The CO catalyst will be installed downstream of the SCR catalyst within the catalytic converter assembly. The chemical reaction in the CO catalyst combines with atmospheric oxygen molecules present in the engine exhaust with the CO molecules to yield CO_2. The presence of a catalyst lowers the activation energy required for the reaction. The catalyst is a series of metal plates such as platinum, palladium, and rhodium, which can be replaced, if necessary, to provide good reaction efficiency. Particulate matter and CO_2 emissions are controlled by good combustion practices. Sulfur dioxide emission controls are not needed because there is essentially no sulfur in the natural gas fuel.

The Facility will be capable of handling and storing aqueous urea solution. The urea will be injected into the exhaust gas duct inside the engine hall building and upstream of the SCR and serve as a reagent for NOx reduction. The storage tank for the urea will have a recirculation system for pressure control. This tank will be enclosed in a tank enclosure building separate from the engine hall, which will be designed with a concrete secondary containment as part of the building foundation. The storage tank will provide local and remote level indication monitoring in addition to a low urea level alarm for transfer pump control. Urea will be delivered by truck to the Facility site.

3.1.1.3.5 Lubricating Oil System

The Facility will include storage tanks for new lubricating oil and service lube oil. These tanks will be enclosed in a tank enclosure building separate from the engine hall which will be designed with a concrete secondary containment as part of the building foundation. The storage tanks will provide local and remote level indication in addition to low/high oil level alarms for transfer pump control. Lube oil will be pumped between these tanks and the generator sets using transfer pumps as new lube oil is required or maintenance is performed.

The tank enclosure building will be equipped with piping connections for the delivery of oil to and from the site via tanker truck. The tanker truck loading area will be designed with spill collection systems that will drain into the tank concrete secondary containment in case of spills or leaks during tanker loading or unloading operations.

3.1.1.3.6 Cooling Water System

The balance of plant cooling water system will transfer water from the generator sets to the radiators. Vents will be provided at the high point of the piping system to facilitate filling. Drains will be provided at the low points of this piping. Pipe routing will be such that local low points are minimized.

Butterfly valves and temperature indicators will be installed at the inlet and outlet of each radiator bank for balancing cooling water flow. Resistant temperature devices will monitor radiator bank inlet and outlet temperature and provide these signals to the Facility control system.

3.1.1.3.7 Maintenance Water System

The maintenance water system will include maintenance water transfer pumps dedicated to a 4,000-gallon storage tank, and controls to manually transfer and store engine cooling water during engine maintenance. The system will have the capability to transfer cooling water to and from each engine and the storage tank located in the engine hall.

The maintenance water tanks will be designed to be the location for mixing of the cooling water solution. This solution will consist of propylene glycol, corrosion inhibitor, and water supplied from the potable water system in proportions as defined by the generating set supplier. The piping will be designed for the same pump to take each of these constituents from a chemical tote and inject into the maintenance water tanks.

3.1.1.3.8 Facility Water Supply System

Potable water will be provided by the existing water source on the Weston Generating Station site, which is supplied from the Village of Kronenwetter municipal water system. The primary water uses for the process will include water for refilling the closed cooling water systems associated with each engine as evaporation occurs over time and periodic spray washes of the compressor side of the engine turbocharger. Potable water would be provided to the control room, break rooms, restrooms, office areas, including plumbed safety showers and eyewash stations located in the engine hall building and in the tank enclosure building. The Facility water systems will be designed with back-flow prevention devices to separate the process users from the potable users.

3.1.1.3.9 Effluent Water Disposal System

The effluent water system will be divided into storm water runoff, sanitary wastewater, and process wastewater.

Storm Water

Storm water will be directed to existing sewers, ditches, and/or stabilized vegetated swales on the Weston Generating Station site. Any new ditches and swales will be designed to accommodate the expected flow rate from a 25-year, 24-hour storm event from all the drainage sources.

Sanitary Wastewater

Sanitary wastewater from bathrooms, showers, and other employee areas will be collected and routed to the existing lift station, which discharges to the Village of Kronenwetter municipal sewer system for offsite treatment.

Process Wastewater

The Project will generate process wastewater from condensate and periodic spray washes of the compressor side of the engine turbocharger. A floor drain and equipment drain or trench system will be installed at each engine to collect the oil-contaminated wastewater from the spray washes which will drain into an oil-contaminated process wastewater system. This system will also collect condensate and process wastewater from all process drain locations in the Facility buildings. The water will be collected in a sump and transferred to an above grade atmospheric oily water storage sized to hold a leak equal to the volume of one engine lube oil sump. This oily water storage tank will be in the tank enclosure building within concrete containment. The oily water storage tank will be equipped with tank venting, leak detection, level transmitter, and associated high level alarms. The Facility will not use the existing wastewater treatment systems for treatment of wastewater generated by the operation of the RICE units. All process wastewater generated by the project will be removed and treated offsite by a third-party contractor.

3.1.1.3.10 Fire Protection and Detection System

The design for the Facility's fire protection systems and features is based on the recommendations of the National Fire Protection Association (NFPA) 850, "Recommended Practice for Fire Protection for Electric Generating Plants," NFPA 37 "Installation and Use of Stationary Combustion Engines and Gas Turbines," NFPA 30 "Flammable and Combustible Liquids Code," and their referenced standards.

The existing private fire water supply system at the Weston station would supply the Facility with firewater for active fire suppression.

Fire resistive construction will be provided in the Facility building, in accordance with Wisconsin's building, fire safety, and energy efficiency codes, and NFPA requirements to limit the extension of possible fire scenarios and protect site property and equipment.

Fire department connections will be located at the Facility, including hydrants located throughout the Facility yard per the recommendations of NFPA 850. Portable fire extinguishers will be provided throughout the Facility in accordance with NFPA 10.

3.1.2 Proposed Additions, Possible Expansions, or Modifications

No additions or future expansions of the Facility are planned at this time.

3.1.3 Expected Hours of Operation and Capacity

The Facility will be available to operate at any time that it is not in a planned or forced outage for maintenance, including both night and day on weekdays, weekends, and holidays. Several factors affect when the Facility operates, including overall system power demand, system power prices, natural gas pricing, temporary transmission constraints, outages of other units, etc. Since these factors vary, operation of the Facility will vary. Typical system demand is highest during the week when all industry is in operation and is highest in the hot summer and cold winter (especially early morning and early evening). Demand during other periods will be high enough to necessitate operation as well, especially during outages of other power generation facilities or when the energy sources for renewable energy production facilities is not available (sun is not shining or wind is not blowing). Additional information related to Facility capacity factors can be found in Section 3.1.5.2.

3.1.4 Facilities' Physical Dimensions

The physical dimensions of the Sites and anticipated appearance are provided in drawings and photo simulations in Volume I Appendix B (Site Arrangements) and Volume I Appendix X (Photo Simulations).

3.1.4.1 Scale Drawings and Simulations

See Volume I Appendix B (Site Arrangements) for detailed scale drawings of proposed Project facilities for each Site.

3.1.4.2 Photo Simulations

See Volume I Appendix X for photo simulations of proposed Project facilities for the Preferred and Alternate Sites.

3.1.5 Operating Characteristics

The following sections describe proposed operating characteristics for the Project. These characteristics include heat rate, water balance, availability, and maintenance.

3.1.6 Heat Rate

Modern utility-scale RICE generators have better full-load heat rates than gas turbines operating in simple cycle configurations, as well as traditional fossil-fueled steam generating plants. This benefit is even more pronounced at part-load operation, as shown in the table below.

Table 3-1 provides the estimated heat rate for the Wärtsilä 18V50SG RICE generators considered for the Project at various load conditions based on the design summer ambient conditions.

Table 3-1: Heat Rates

Operating Mode at Annual Average Ambient Conditions	Net Facility Heat Rate HHV[1] (Btu/kWh[2])	Net Output (kW)
Half load (Facility operating 4 units)	8,212	74,283
Full load (Facility operating 7 units)	8,212	129,995

[1] Higher heating value – HHV
[2] British thermal units per kilowatt hour – Btu/kWh

3.1.6.1 Equivalent Availability and Capacity Factors

Based upon historical operation obtained from existing RICE generating stations owned and operated by UMERC, the Equivalent Availability Factor for the facilities is approximately 91.5 percent with approximately 1.82 percent Equivalent Forced Outage Factor and approximately 5.84 percent Equivalent Un-forced Outage Factor. This reflects operation of the facilities referenced above reporting to the Generating Availability Data System in the year 2020. The facilities mentioned were constructed in 2019 and operate RICE units of the same manufacturer and model proposed herein.

Joint Applicants expect the reliability and associated availability for the proposed facility to be equivalent or better than the real-world data summarized above.

3.1.7 Heat Balances

Not applicable to the proposed RICE-driven generator technology.

3.2 Fuel Supply

The following sections describe fuel sources, availability, heating value, and delivery systems.

3.2.1 Types of Proposed Primary and Backup Fuels

The Facility will burn natural gas without the capability to use a backup fuel. New facilities for the natural gas infrastructure will include a 12-inch diameter pipeline from an existing gas conditioning station on the Weston Generating Station site. ANRPL owns the natural gas transmission pipeline that supplies fuel to the Weston Generating Station, which will also supply natural gas to the Project.

3.2.2 Fuel Source and Availability

Natural gas for the Project will flow from the ANRPL interstate transmission line to the Weston Generating Station. WPSC, through its natural gas utility, will provide the commodity and delivery service through its natural gas distribution tariff.

3.2.3 Potential Fuel Heating Value

Natural gas delivered to the Facility will be pipeline-quality gas which is regulated by the ANRPL tariff, Section 6.13. The tariff contains heating value and chemical make-up standards that the natural gas must meet. For example, the following specifications can be found in the above referenced tariff:

- Heating value not above 1,200 British thermal units (Btu), nor less than 967 Btu, per cubic foot of natural gas
- The natural gas cannot contain more than 20 grains of total sulfur per 100 cubic feet.
- The natural gas cannot contain more that 2 percent CO_2 by volume.

3.2.4 Fuel Transport and Delivery System

New facilities for the natural gas infrastructure will include a 12-inch diameter pipeline from an existing gas conditioning station on the Weston Generating Station site. The Facility will use the existing infrastructure at the Weston Generating Station and, at a minimum, a new dedicated fuel gas filter coalescer for the Project.

3.2.5 Coal

No coal will be used by the Facility.

3.2.6 Natural Gas

The following sections provide further details of the natural gas to be supplied for the Facility.

3.2.6.1 Pipeline Supplier

The interstate pipeline supplier to the existing Weston Generating Station site is ANRPL.

3.2.6.2 Fuel Supply

The following is a discussion of the fuel supply in terms of firm, secondary firm, and interruptible capacity.

3.2.6.2.1 Firm Capacity

Natural gas for the Project will be supplied by WPSC's gas utility. WPSC holds firm pipeline capacity to meet the peak day requirement for its firm sales customers. The Project will have a target firm supply of approximately 17,000 million British thermal units per day (MMBtu/day). This level of firm capacity provides enough fuel for 16 hours of full load operation.

Firm capacity at this level is not currently available from ANRPL at this location; however, WPSC will continue to seek solutions for additional firm pipeline capacity.

Consider that, when supplied by WPSC, the Facility enjoys the benefit of load diversity even though the service will be firm only up to a certain level.

3.2.6.2.2 Secondary Firm Capacity

No secondary firm natural gas supply is currently secured for the Facility.

3.2.6.2.3 Interruptible Capacity

Interruptible pipeline capacity will be used when firm service is not available.

3.2.6.3 Natural Gas Pipeline Characteristics

ANRPL would transport natural gas to the Facility via existing infrastructure currently providing natural gas to the Weston Generating Station.

3.2.6.4 Delivery Vehicles

New facilities for the natural gas infrastructure will include a 12-inch diameter pipeline from an existing gas conditioning station on the Weston Generating Station site. No vehicles will be used to deliver natural gas to the Facility.

3.2.6.5 Onsite Fuel Handling

Fuel handling for the Facility will include a new fuel gas filter/coalescer, regulating valves and associated valves and piping. Existing gas conditioning equipment including fuel gas heaters, regulation and

metering will be used for the Facility. An additional fuel gas water bath heater is planned for the Project but, may be removed from the Facility during detailed design should existing infrastructure and heating deemed sufficient during detailed design.

3.2.7 Biomass

No biomass will be used by the Facility.

3.2.8 Fuel Storage

Natural gas will not be stored onsite.

3.2.9 Fuel Quantity

Error! Reference source not found. provides the expected fuel quantity to be used for various modes of operation at summer design conditions. The maximum fuel heat input for the proposed RICE facility is approximately 1,070 million British thermal units per hour (MMBtu/h) (higher heating value (HHV)). This equates to a usage of approximately 25,680 million standard cubic feet per day assuming a heating value for natural gas of 1,060 Btu/SCF (HHV).

3.3 Water – Supply, Storage, Use, Discharge

The following sections describe water supply, storage, use, and discharge.

3.3.1 Supply

Service water and domestic use water will be provided by the existing water source on the Weston Generating Station site, which is the Village of Kronenwetter municipal potable water supply system. The primary service water uses for the Facility will include water for refilling the closed cooling water systems associated with each engine as evaporation occurs over time and periodic spray washes of the compressor side of the engine turbocharger. Potable water will be provided to the control room, break rooms, restrooms, office areas, including plumbed safety showers and eyewash stations located in the engine hall and in the tank enclosure building. The Facility water systems will be designed to maximize water reuse and recycling and minimize water consumption within the Facility systems.

3.3.1.1 Water Supply Sources

For both Sites, service water and domestic use water needs will be met by the existing water source on the Weston Generating Station site, which is the Village of Kronenwetter municipal potable water supply system.

3.3.1.2 Water Supply Pipelines

A water pipeline, approximately 3 inches in diameter, to the project will be constructed from the existing potable water source located immediately northeast of the Preferred Site.

3.3.1.3 Low-Capacity Wells

No low-capacity wells will be used for the Facility.

3.3.1.4 High-Capacity Wells

No high-capacity wells will be used for the Facility.

3.3.2 Storage

No new water storage will be added for the Facility. The existing fire water storage tank and pumps will be used to provide the Facility with fire water for this Project.

3.3.3 Consumptive Use

The primary service water uses for the Facility will include water for refilling the closed cooling water systems associated with each engine as evaporation occurs over time and periodic spray washes of the compressor side of the engine turbocharger. The Facility water systems will be designed to maximize water reuse and recycling and minimize water consumption within the Facility systems.

Process wastewater used for the Facility will be collected onsite and stored in an above grade tank within a concrete containment. All process wastewater generated by the project will be removed and treated offsite by a third-party contractor. Sewage will be discharged to the Village of Kronenwetter municipal sewer system for offsite treatment.

3.3.3.1 Water Balances for Operating Modes

See Figure 3-2 for the water mass balance diagram for a typical operating scenario.

3.3.3.2 Alternatives for Reduced Water Consumption in Cooling Towers

Cooling towers are not required for the operation of RICE-driven electric generators. Engine cooling will be provided by a closed loop system. The system circulates coolant through the engine, then through a forced air-cooled radiator bank, then back to the engine to complete the cycle. The closed loop cooling system consumes a minimal amount of water, typically two gallons per engine per week.

3.3.3.3 Operational Mode Flows

Varying the operational mode of the RICE-driven Facility results in minor changes in water use from the typical operating scenario above, so alternative modes are not applicable for this technology.

3.3.3.4 Water Balance for Ash Handling

No coal or biomass will be used by the Project. As such, no water balance for ash handling will be required, and there will be no Wisconsin Pollutant Discharge Elimination System (WPDES) requirement resulting from ash-handling water discharges.

3.3.4 Wastewater Discharge

Process wastewater used for the Facilty will be collected onsite and stored in an above grade tank within a concrete containment. All process wastewater generated by the project will be removed and treated offsite by a third-party contractor. Sewage will be discharged to the Village of Kronenwetter municipal sewer system for offsite treatment. No wastewaters will be discharged to surface waters of the State; therefore, the Project does not require a WPDES Permit for operation. See Figure 3-2 for a water mass balance at maximum load.

3.3.4.1 Wastewater Discharge Outfall Points

The Facility will not discharge into a lake, river, or other surface water. Process wastewater used for the Facility will be collected onsite and stored in an above grade tank within a concrete containment. All process wastewater generated by the Facility will be removed and treated offsite by a third-party contractor. Sanitary wastewater will be piped offsite to the Village of Kronenwetter municipal sewer system, which is then pumped to the Rib Mountain Metro Sewerage District for offsite treatment. The Rib Mountain Metro Sewerage District discharges treated water to the Wisconsin River.

3.3.4.2 Wastewater Collection Points and Pathways/Pipelines

Process wastewater used for the Facility will be collected onsite and stored in an above grade tank within a concrete containment. All process wastewater generated by the Facility will be removed and treated offsite by a third-party contractor. Sanitary wastewater from bathrooms, showers and other employee areas will be collected and routed to an existing lift station, which will discharge to the Village of Kronenwetter municipal sewer system for offsite treatment. See Figure 3-2, and Sections 5.12.4 and 5.12.5 for further detail.

3.3.4.3 Water/Oil Separation Points

A floor drain and equipment drain or trench system will be installed at each engine to collect the oil-contaminated wastewater from the spray washes which will drain into an oil-contaminated process wastewater system. The water will be collected in a sump and transferred to an above grade atmospheric oily water storage sized to hold a leak equal to the volume of one engine lube oil sump. This oily water storage tank will be in the tank enclosure building within concrete containment. The oily water storage tank will be equipped with tank venting, leak detection, level transmitter, and associated high level alarms. The oily water storage tank contents will be removed and treated offsite by a third-party contractor.

3.3.4.4 Facilities Required by WPDES Permit

No wastewaters will be discharged to surface waters of the State; therefore, the Facility does not require a WPDES Permit for operation.

3.4 Steam

The Facility will not produce steam.

3.5 Air Pollution Emissions Control Equipment

A Selective Catalytic Reduction (SCR) system will be installed in the engine exhaust stack for nitrogen oxides (NOx) control. An oxidation catalyst will also be installed downstream of the SCR catalyst within the catalytic converter assembly. The following sections describe proposed pollution control equipment and its integration into the Project.

3.5.1 Pollution Control Equipment

The following sections describe NOx, CO, and VOCs controls proposed for the Project. See Volume I Appendix B (Site Arrangements) for locations of pollution control equipment.

3.5.1.1.1 Selective Catalytic Reduction System

NOx emissions are controlled using a SCR system in the engine exhaust stack as required for compliance with emission limits. The SCR system will receive urea from the aqueous urea system. The urea will be injected into the exhaust gas duct indoors and upstream of the SCR and serve as a reagent for NOx reduction.

3.5.1.1.2 Oxidation Catalyst

An oxidation catalyst will be used to control CO, VOCs, and hazardous air pollutants. The CO catalyst will be installed downstream of the SCR catalyst within the catalytic converter assembly. The chemical

reaction in the CO catalyst will combine with atmospheric oxygen molecules present in the engine exhaust with the CO molecules to yield CO_2. The presence of a catalyst will lower the activation energy required for the reaction. The catalyst is a series of metal plates such as platinum, palladium, and rhodium, which can be replaced, if necessary, to provide good reaction efficiency. The catalyst beds that reduce CO also promote the oxidation of VOCs, thereby reducing VOC emissions out the stack.

3.5.2 Integration of Pollution Control Equipment

See Volume I Appendix B (Site Arrangements) for locations of pollution control equipment.

3.6 Solid, Oil, or Hazardous Wastes, including Ash

The Project will not generate an ash byproduct because it will be fueled by natural gas. No solid wastes will be generated by the Facility during the production of electricity. Solid waste produced during the Facility will only occur from construction debris, wastes produced by construction workers, and wastes produced by employees onsite during operation of the Project. These wastes will be collected in trash containers throughout the Project site and sent to a local landfill.

The following sections discuss the hazardous chemicals and waste products for the Facility.

3.6.1 Hazardous Chemicals

Table 3-2 and Table 3-3 provide chemicals needed during construction, pre-operational cleaning, and for regular operations and maintenance once the Facility is in-service.

Table 3-2: Typical Chemicals Stored During Construction

Product	Storage Method
Chemicals used in construction and pre-operational cleaning of piping and equipment:	
Oxygen	
Surfactant	
Corrosion inhibitor	
Paint	
Solvents and cleaners	
Concrete curing compound	
Fuel oil and gasoline	Stored in separate tanks onsite
Aqueous urea solution	Stored in tank(s) onsite
Glycol	Stored in tank onsite
Chlorine	Stored in containers onsite
Lube oil	Stored in reservoir and/or tanks and drums onsite

Product	Storage Method
Hydraulic oil	Stored in reservoir and/or tanks and drums onsite

Table 3-3: Typical Chemicals Stored for Operation

Product	Use
Glycol	Anti-freeze chemical used in closed-loop cooling
Lube oil	Engine lubrication
SCR[1] System	
Aqueous urea solution	Control of nitrogen oxides

The Facility will have a construction superintendent responsible for oil spill containment and cleanup. The construction superintendent will report spills and supervise cleanup and disposal of any contaminated soil and spill cleanup materials for any significant volume (defined as 55 gallons or more) of chemicals such as lubricants, fuel, grease, or other oil. Diesel and gasoline fuel will be temporarily stored at the Project site during construction in aboveground tanks. Preventative measures will be implemented during re-fueling or transfer of these fuels to reduce the risk of spills. Lubricating oils and certain other industrial chemicals required for the Project will be stored in specially designed and covered containment areas. Also, equipment will be kept in good working condition through routinely inspections and service to reduce the risk of leaks of transmission, hydraulic, or brake fluid. Chemical storage areas will be well marked and include eye wash stations, first aid kits, safety showers, hose stations, and spill kits with absorbent pads and/or material.

Larger spills will be removed from the containment area using a vacuum tank truck or will be pumped into a suitable container for cleanup. Contaminated soil and/or absorbent pads or products used to cleanup a spill will be immediately removed, stored, and disposed of in accordance with Wisconsin State regulations. Absorbent pads or other manufactured absorbent products will be used to cleanup minor spills. These pads and absorbent products will be stored on maintenance trucks and/or in a dedicated area that is readily accessible.

3.6.2 Solid Waste Reuse/Recycling and Disposal Facilities

The Project will generate solid waste during construction and operation in the form of construction debris and employee-generated waste. Wastes are anticipated to be disposed of at a local landfill. Recycling pickup services are anticipated to be provided by a local disposal company.

3.6.3 Coal or Solid Biomass

No coal or solid biomass will be used by the Facility.

3.6.4 Oil/Water Separation

A floor drain and equipment drain or trench system will be installed at each engine to collect the oil-contaminated wastewater from the spray washes which will drain into an oil-contaminated process wastewater system. The water will be collected in a sump and transferred to an above grade atmospheric oily water storage sized to hold a leak equal to the volume of one engine lube oil sump. This oily water storage tank will be in the tank enclosure building within concrete containment. The oily water storage tank will be equipped with tank venting, leak detection, level transmitter, and associated high level alarms. The oily water storage tank contents will be removed and treated offsite by a third-party contractor.

3.7 Electricity

The following sections describe the step-up transformer substation, the transmission interconnection study, and the transmission line facilities required for the Project.

3.7.1 Step Up Transformer Substation

The Project will connect to the existing 115-kV substation at the Weston Generating Station.

3.7.2 Transmission Interconnection Study

MISO's Tariff and Business Practices Manual contain provisions to replace an existing generating facility with a new generating facility without the need to request new interconnection service. The replacement generating facility can use the Interconnection Service of the existing facility if it is equal to or smaller in MW size, uses the same point of interconnection to the transmission system, has no material adverse impact on the transmission system, and will commence commercial operation within three years of the existing generating facility's retirement. Within 180 calendar days of receiving a replacement request, MISO will perform a Replacement Impact Study to determine if the replacement generating facility would have a material adverse impact on the system when compared to the existing facility. In that same period, MISO will also conduct a reliability assessment study to evaluate the "gap period" between the existing facility ceasing operation and commercial operation of the replacement.

Joint Applicants have commissioned two optional studies with MISO to evaluate the replacement of Weston 2, 31 and 32 with the Project and the "gap" period between the retirement date of Weston 2 and the commercial operation date of the new RICE units. Weston 31 and 32 will retire the day before the

Project commences commercial operation, therefore, there is no "gap" period for Weston 31 and 32. The results of these studies are expected in late April, 2021. Joint Applicants anticipate that the optional studies will show no adverse impacts to the transmission system either for the "gap" period or for the replacement of the existing units with the RICE units. A formal replacement request will be submitted along with formal retirement requests for Weston 2, 31 and 32 when this CPCN approval is received. Joint Applicants anticipate that MISO will reuse the results of the Optional Studies and no restudy will be required to complete both the retirement and replacement generation requests and again, the Joint Applicants anticipate no adverse impacts to the transmission system and Joint Applicants anticipate similar findings as those within the optional studies.

3.7.3 Transmission Line Facilities

New electric transmission line poles will be installed to connect the new generation facility to the tie-in location at the existing 115-kV switchyard.

4.0 PROJECT COSTS

4.1 Capital and Construction Costs

4.1.1 Capital Costs of the Facility

The capital cost estimate for the Project is $171,400,000 with the cost breakdown as presented in Table 4-1 below. This capital cost estimate was developed in 2021 dollars and escalation was applied based on a 2023 commercial operation date. The capital cost estimate includes costs associated with design and construction of the Facility, on-site electric interconnection facilities, on-site natural gas pipeline facilities, and Joint Owner's costs. The Project cost estimate does not include AFUDC[3].

Table 4-1: Capital Cost Estimate

Item	Estimated Cost
EPC cost	$85,000,000
Equipment supplier cost	$71,000,000
Owner's costs	$15,400,000
Total	**$171,400,000**

4.1.2 Construction Cost of the Facility

The total costs of the Project are estimated to be $171,400,000. The approximate breakdown of this cost is as follows: The cost estimate uses an EPC contracting approach with the selected contractor performing engineering, procurement, construction, and startup of the Facility. The cost estimate includes project direct costs, project indirect costs, construction indirect costs, contractor fees, and general and administrative (G&A) expenses to execute the proposed project. Also included in the estimate are owner's costs for development and execution of the Project. Project contingencies, as well as escalation to the actual date of cash expenditures are also included in the Project cost estimate.

4.1.2.1 EPC Costs

The EPC costs include the costs for the procurement of balance of plant equipment, commodities, installation of the major equipment, and materials used within the permanent plant facility. The EPC direct costs also include costs for construction labor and installation subcontracts as required to install the permanent plant facilities. As a basis of the estimate, material takeoffs, balance of plant (BOP) equipment

[3] Joint Applicants are also requesting as part of this application to earn AFUDC on 100% of the CWIP balance. For WEPCO, the AFUDC amount is $5.5 million and for WPSC the AFUDC amount is $4.7 million.

and associated installation requirements, and major equipment and installation requirements were considered. Engineering costs and contractor fees for performing the engineering, procurement, construction, and startup of the proposed project, are based on recent industry trends and current market indicators. These costs include those for EPC contractor project management and G&A fees. Given the current design phase of the Facility, contingencies have been allocated based on comparable market projects, assessment of project-specific risks, and uncertainty related to market effects to key components of the Facility.

4.1.2.2 Equipment Supplier Costs

The equipment supplier costs include the costs for the procurement and delivery of the major plant equipment, which include reciprocating engines, generators, pollution control equipment, ductwork, stacks, expansion joints, and controls system. The costs also include startup support of the supplier's equipment, and technical support personal required to install the equipment.

4.1.2.3 Owner's Costs

Owner's costs included in the capital cost estimate are the costs experienced by the Joint Applicants to develop, manage, and place into service the proposed project that are not otherwise reflected in the EPC estimate. These costs include, but are not limited to Project development, permitting, project management, construction management, and operations personnel during construction, commissioning, training, supply of start-up and commissioning consumables, such as fuel, water, urea, chemicals, site security and communications. They also include an initial stock of spare parts and initial equipment long-term maintenance program fees, control room, lab, and warehouse furniture and furnishings, sales taxes; and contingency and escalation to the time of expenditure.

4.1.3 Air Pollution Control Costs

The main air quality control equipment included in the projected capital cost estimate are an SCR system for NOx emissions control and an oxidation catalyst for CO and VOC emissions reduction. The SCR system will require associated urea storage, forwarding, vaporization, and injection equipment. The air pollution control equipment is estimated to cost $8,850,000.

4.1.4 Property to be Retired

No property will be retired for this Project.

4.1.5 Costs of Alternatives Locations

The alternate project location was ultimately not selected because of the increased costs of gas and electrical transmission to the site.

4.1.5.1 Alternate Locations

Refer to Volume I Appendix A for aerial representation of the sites selected for the proposed project. The Preferred (North) and Alternate (South) sites are both within the boundary of the existing Weston Generating Station.

4.1.5.2 Comparison of Primary and Alternate Sites

When compared to the Alternate (southern) Site, the Preferred Site is expected to result in reduced project costs.

The primary contributors to the lower costs for the Preferred Site as compared to the Alternate Site include the following:

- Lower gas and electrical transmission infrastructure costs due to closer proximity to gas and electric tie in points;
- Lower costs associated with tie-in to water supply lines from Weston 3 facility;
- Lower costs associated with tie-in to existing wastewater collection system;
- Lower costs associated with productivity due to adjacent craft parking, trailers and laydown areas to Preferred Site;
- Lower transportation costs for moving materials from laydown area to job site for installation;
- Lower transportation costs of engines due to Preferred Site location adjacent to railroad tracks.

4.2 Project Financing

4.2.1 Lease Arrangements

The Project will be a rate base asset rather than a leased asset under the lease generation law. Therefore, there is no lease requiring approval as part of the CPCN.

4.2.2 Affiliated Interest Approvals

The Project will require affiliated interest approvals, including of a joint ownership and joint operating agreement between Joint Applicants. The parties are currently negotiating the terms of those agreements. The Applicants will seek separate approval of those agreements under Wis. Stat. 196.52(3). Joint

Applicants will also enter a Replacement GIA with ATC, and will separately seek approval of that agreement prior to interconnection.

4.2.3 Leased Generation Contracts

See Section 4.2.1.

4.2.4 Comparison of Types of Contracts

See Section 4.2.1

4.3 Forecasted Costs

4.3.1 Market Price Forecasts

For a detailed discussion of market price forecasts incorporated in the Joint Applicants' economic modeling, see Volume III Appendix B (CONFIDENTIAL). The following sections summarize these forecasts:

- Energy Prices: As part of the overall process, Joint Applicants contracted with Energy Exemplar and Siemens to model long-term expansion and the resulting market prices of the Eastern Interconnect and specifically MISO Load Resource Zone 2[4]. The resulting price forecasts were then incorporated into PLEXOS to appropriately represent the market while optimizing each individual utility's integrated resource plan for 2021-2050.
- Capacity Prices: The modeled capacity price forecast is based on MISO's most recent cost of new entry (CONE) for Load Resource Zone 2, which includes Joint Applicants' service territories. Utilization of CONE as a capacity price in the near term may be considered by some to be too high, but as more and more existing capacity is retired, the expected cost for a utility to build capacity in Load Resource Zone 2 is expected to be the value of CONE. To account for this the Joint Applicants assumed a gradual increase in the capacity prices until it is 100% the value of CONE.
- Market Energy CO_2 Content: While evaluating CO_2 reduction strategies Joint Applicants' incorporated an average CO_2 emission content associated with every megawatt-hour (MWh) of energy purchased in the MISO market to correctly account for CO_2 emissions even though they may not have directly been produced by one of Joint Applicants' ' generators.

[4] Energy Exemplar's Aurora model was used to produce the market prices for the Eastern Interconnect and MISO Load Resource Zone 2.

- Avoided CO_2 Dispatch Costs: The economic evaluation includes, as a part of the impact on fuel costs, an evaluation of avoided dispatch costs to customers by transitioning the combined fleet to meet carbon reduction goals when compared to operating the existing fleet into the future. To accomplish this objective, a proxy value of the cost of carbon was used in the analysis. The base assumption for this proxy value is $20/ton of carbon emitted starting in 2025, which is the year of the Joint Applicants' first CO_2 reduction target. This proxy value escalates 2.5% per year over the balance of the study period.

4.3.2 Fuel Prices

The base natural gas price forecast used in the economic evaluation was developed and provided in EIA's 2020 Annual Energy Outlook (AEO) – Reference Case. Two natural gas price sensitivities were performed to test the overall impact natural gas prices would have on the overall economics of the GRP. A high natural gas price forecast was developed by calculating and adding one standard deviation to the Reference Case forecast. The other forecast was based on AEO's assumption of a $15 Carbon Dioxide Allowance Fee scenario, which included a CO_2 tax on every ton of CO_2 produced[5].

The coal price forecasts for each of the Joint Applicants' coal plants are based on the most recent internal forecasts. After the forecasted period, coal prices are escalated 2.5% annually over the balance of the study period.

4.3.3 Estimate of Annual Production Costs

Figures 4-1 and 4-2 provide an estimate of the total production costs, which consists of variable, fuel, and fixed costs. In the capacity expansion modeling runs Joint Applicants' portfolios models are mutually exclusive, even though they utilize the same market costs and parameters. Due to explicit CO_2 reduction parameter assumptions that are unique to each utility, the dispatch profile of each utility's ownership can vary. However, in reality the CO_2 emission reduction goals will be evaluated across all of WEC's electric generation operations, and the company will look at those reduction levels in aggregate as opposed to utility by utility. The information provided below consists of the combined production costs of each Joint Applicant's 50% ownership share. In other words, it is an estimate of the total costs (100%) of the entire Facility. Values are expressed in millions of dollars per year in Figure 4-1 and dollars per MWh in Figure 4-2.

[5] The carbon tax in this scenario impacts the fuel price assumptions used in it – this scenario does not assume a direct carbon tax on the electricity generated.

Figure 4-1: Estimate of Annual Production Costs in Millions of Dollars per Year

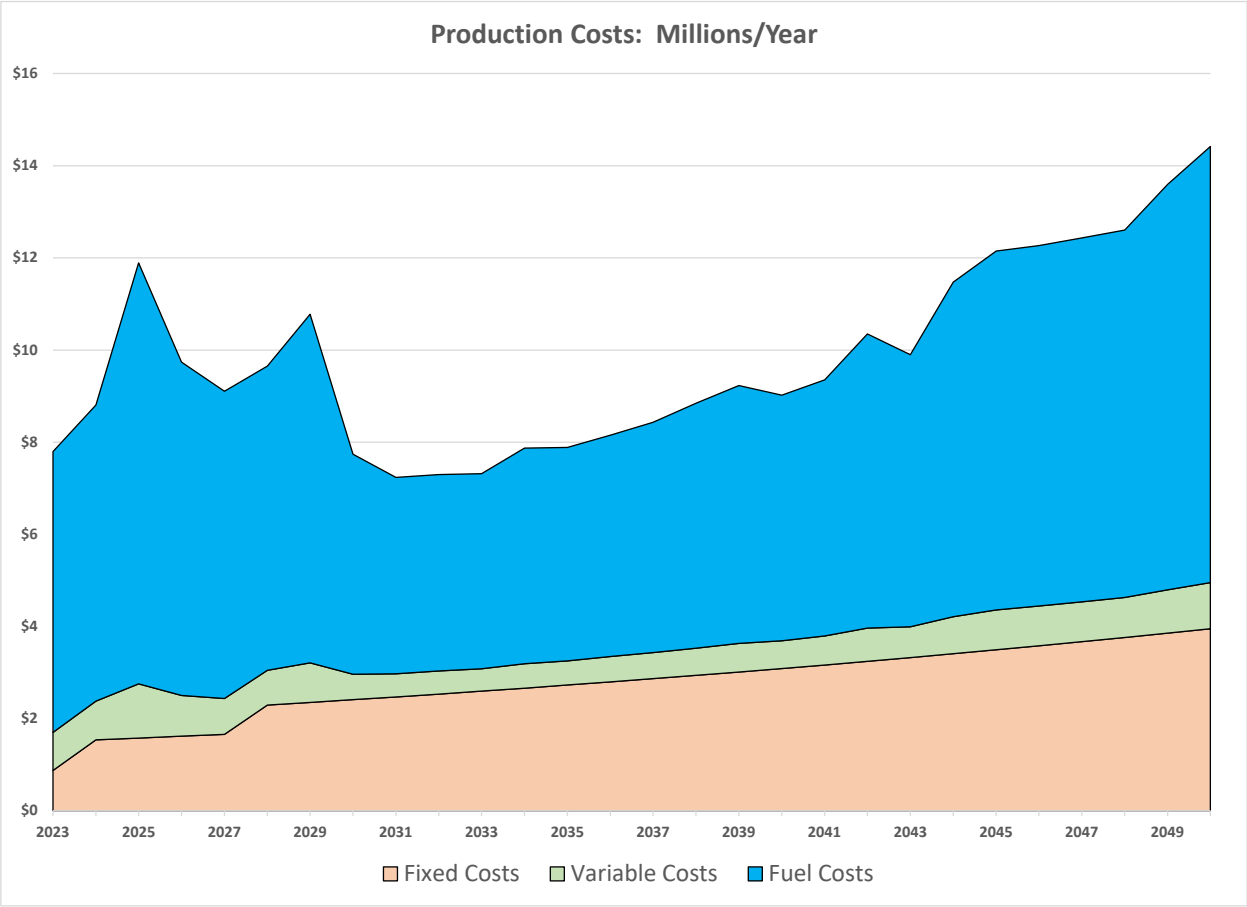
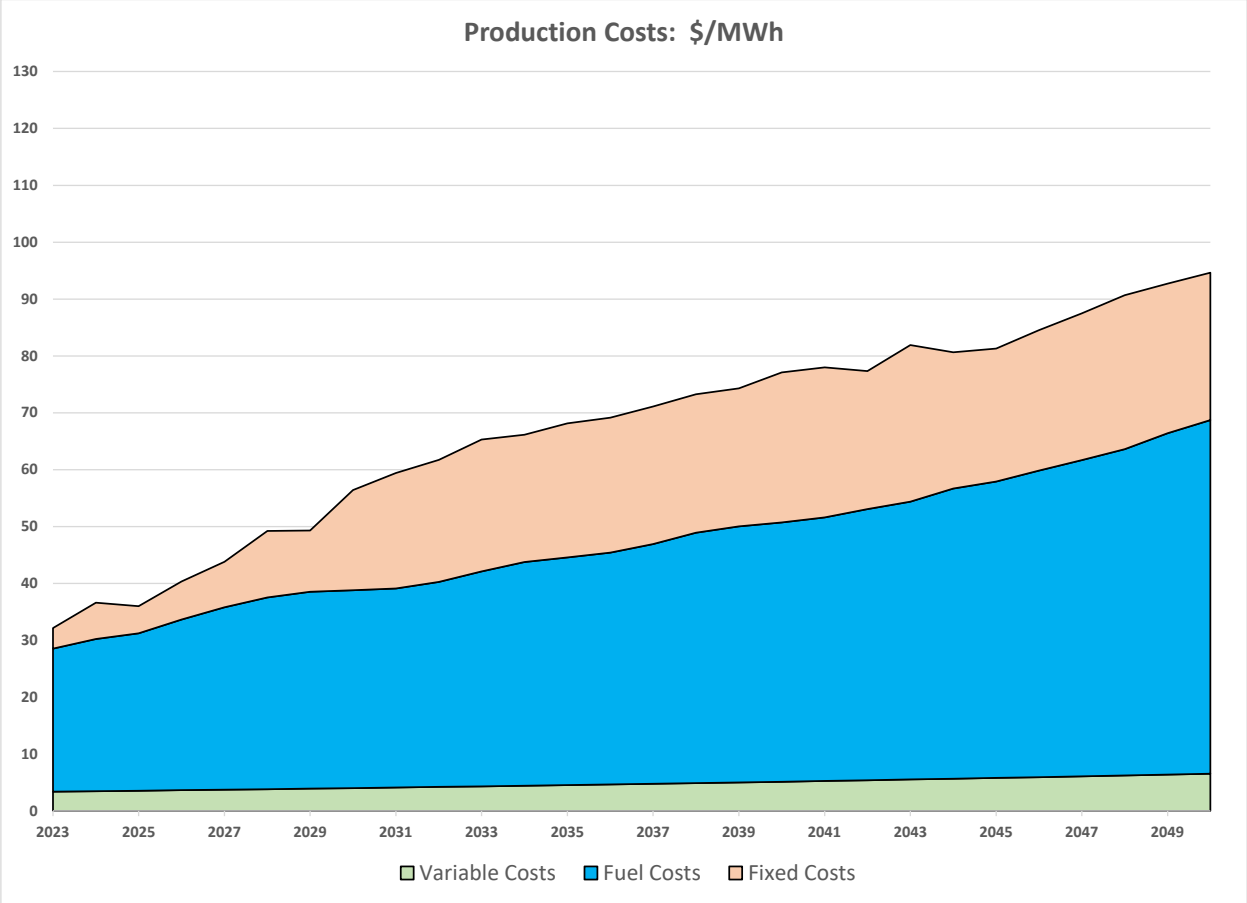


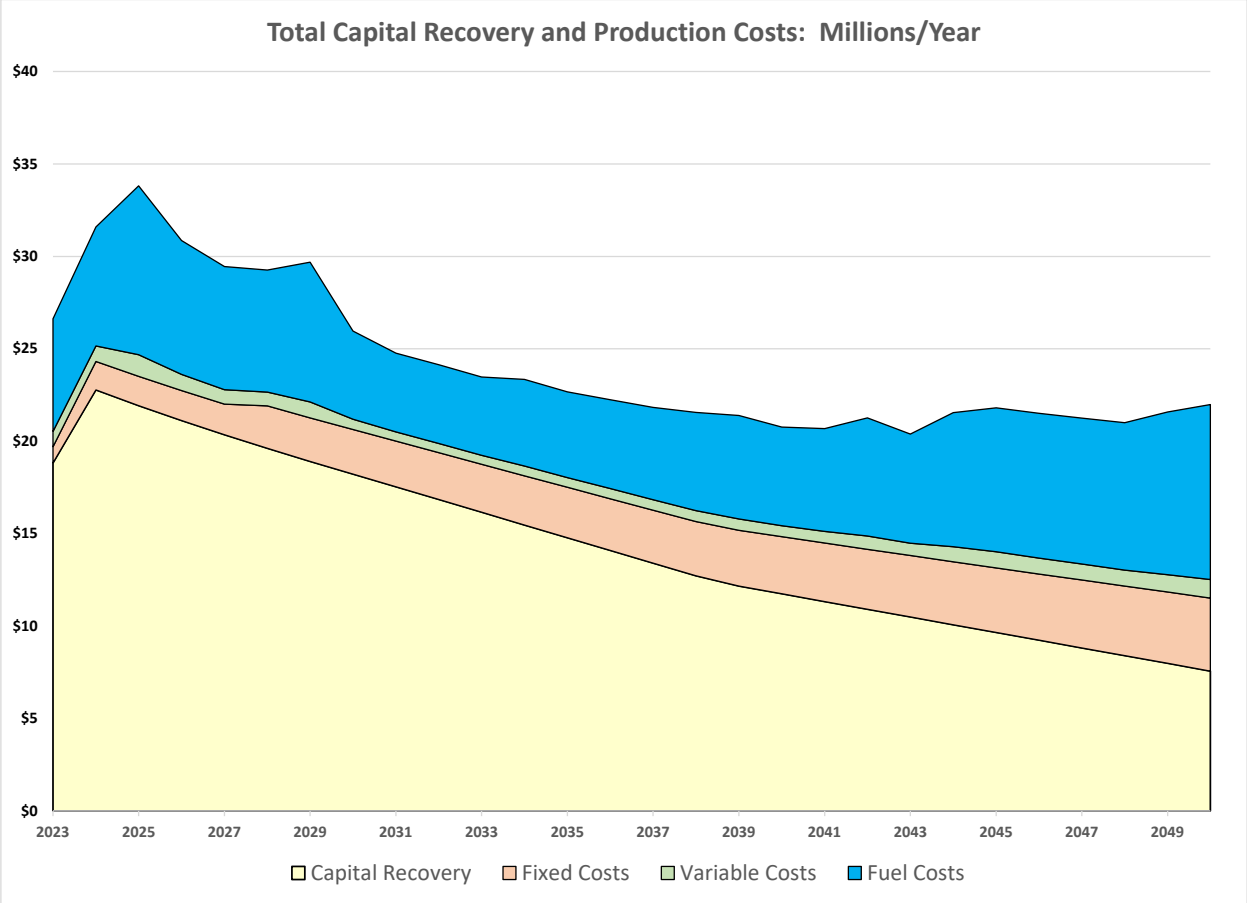
Figure 4-2: Estimate of Annual Production Costs in Dollars per Megawatt Hour



4.3.4 Estimate of Annual Total Costs

An estimate of the total annual costs is provided in Figure 4-3. The total annual cost estimate is comprised of the production costs identified in Figures 4-1 and 4-2 and the capital revenue requirements for the overall $171.4 million capital cost estimate, not including AFUDC. The capital revenue requirements include depreciation expenses, income taxes and return on rate base utilizing the current capital structure and rates for each utility. Similar to Figure 4-2, the information provided below consists of each Joint Applicant's 50% ownership share of total costs. Values are expressed in millions of dollars per year.

Figure 4-3: Estimated Total Annual Costs



4.3.5 Useful Life of the Facility

The Weston RICE Facility is designed for a useful life of not less than 30 years.

4.3.6 Comparative Costs of Fuel Alternatives

The alternatives analysis described in Section 2.0 and further detailed in Volume III Appendix B (CONFIDENTIAL) describes the full list of planning alternatives considered in the analysis.

4.3.7 Operation and Reliability of Service

Operation and reliability of any generating facility is extremely important but can differ based on technology. As described in Section 2.0, RICE will provide superior operational flexibility, efficiency, and reliability to the bulk power system. RICE technology is not new to WEC. Currently, UMERC owns and operates two RICE facilities, the 7-unit F.D. Kuester facility, which is the same design as this Project, and a 3-unit A.J. Mihm facility in Michigan's Upper Peninsula.

4.4 Transmission Costs, if Applicable

There are no anticipated transmission costs for this Facility.

5.0 NATURAL RESOURCES IN THE PROJECT AREA

The natural resources located in the vicinity of the Project will be discussed in the following sections.

5.1 Mapping Requirement

See Volume I Appendix B (Site Arrangements) for maps of the proposed Sites.

5.2 History of Sites and Grounds

The following sections provide additional information related to previous and current land use and ownership, remediation conducted at each of the Sites, and any planned future remediation.

5.2.1 Previous and Current Land Use and Ownership

The Project site is located at the existing Weston Generating Station on a 450-acre parcel owned by WPSC. The Weston Generating Station property was historically used as woodland and farmland. The property for Weston Units 1 and 2 was agricultural land when it was purchased in 1949. The property for Weston Unit 3 and later Unit 4 was also agricultural land when it was purchased in 1976.

Following construction of Weston Units 1-3, the land surrounding the plant was leased for numerous land uses including agriculture and gravel storage. These leases have since been terminated.

The property on which the Project will be located has historically been used as woodland and farmland.

The Project site is currently used to support operation of the existing Weston Generating Station.

5.2.2 Remediation

According to the WDNR's Bureau for Remediation and Redevelopment Tracking System, leaking underground storage tanks and spills have been historically reported at the Project site. Remedial activities for these historic events, including spill cleanup and/or soil excavation and transportation to a landfill if needed, has been fully completed as indicated by the closed or historic status of the activity in the WDNR tracking system.

5.2.3 Future Remediation

According to the WDNR's Bureau for Remediation and Redevelopment Tracking System and, to the best of the Joint Applicants' knowledge, there is no contamination that would require remediation on the Weston site.

5.3 Construction Areas

The following sections describe the proposed construction areas for the Project, including details concerning laydown, material storage, and parking areas, as well as post-construction site restoration. A table showing the acreages of the construction areas is provided in Section 5.8.2, Table 5-2.

5.3.1 Laydown Areas and Material Storage Areas

The construction area and laydown site arrangement are shown in Volume I Appendix B (Site Arrangements) for each Site. The drawings show the following:

- Access for construction workforce, material deliveries, and construction equipment
- Construction offices
- Laydown areas for material storage and staging
- Construction entrance turnstile with controlled electronic badge entry into the Facility site

5.3.2 Construction Parking Areas

Construction parking areas are shown in Volume I Appendix B (Site Arrangements) for the Preferred and Alternate Sites.

5.3.3 Expected Use Post-Construction

Construction areas, including laydown, material storage, and parking areas, will be restored to current (pre-construction) use.

5.3.4 Post-Construction Restoration

Temporary construction facilities will be dismantled after construction is complete. These areas will be restored to pre-construction conditions.

5.4 Geology

The following sections describe the geology of the Sites.

5.4.1 Site Geology

The geology of the Sites includes consolidated sedimentary rock deposited as sequences of sandstone, shale, limestone, or dolomite. This makes up the current sedimentary rock aquifer and confining bed. Beneath the consolidated sedimentary rock is Precambrian crystalline rock (Ground Water Atlas of the United States, 1992). The depth to bedrock at the Weston Generating Station location is between 100 and 110 feet.

5.4.2 Special Conditions

No unusual geological features or conditions related to site geology are anticipated to require special methods or management during construction.

5.4.3 Impact on Geological Formations

No active or inactive mines or quarries are known to be located within 0.5 mile of either the Preferred or Alternate site.

Construction work will be limited to minor earthwork and regrading of the Site. Heavy construction equipment will be used. Blasting will not be required for construction. Therefore, based on the limited amount of excavation required and the type of substrate at the site, construction of the Facility is not expected to impact the area's geological formations.

5.5 Topography

Topography of the Preferred and Alternate Sites is discussed in the following sections.

5.5.1 General Topography for Each Site

The Sites are located approximately 7 miles south of Wausau, Wisconsin on the east side of the Wisconsin River in an area that is currently used for electrical generation. The Preferred and Alternate Sites are generally flat with an elevation of approximately 1,180 feet above sea level. As shown on the USGS topographic map data, the Preferred Site gradually slopes to the west towards the Wisconsin River, and the Alternate Site gradually slopes to the south.

5.5.2 Changes to Site Topography

Construction impacts to the topography will be minimal. The Preferred and Alternate Sites are generally at the expected design finish grade and significant impacts to the overall site topography are not expected. Onsite earthwork will be balanced, to the extent practicable, with no significant imported general fill required nor any significant excess excavated material to be permanently stored onsite or exported.

5.6 Soils

According to the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (http://websoilsurvey.nrcs.usda.gov), two soil types are mapped within the Sites (Volume I Appendix E). The two soil types are Pits, gravel and Mahtomedi loamy sand.

5.6.1 Soil Types

The following information for each soil type was obtained from the USDA NRCS Web Soil Survey. More detailed soils information for each soil type is available from the NRCS[6].

5.6.1.1 Mahtomedi loamy sand, 0 to 6 percent slopes

The Mahtomedi loamy sand series consists of dark brown to very dark brown loamy sand in the upper layers and dark brown gravelly loamy coarse sand in the lower portions. Approximately 90 to 95 percent of the soil present at the Weston Generating Station consists of Mahtomedi loamy sand, which includes the entire Alternate Site and the northeast corner of the Preferred Site. Deep, rapidly permeable with low water capacity and organic matter content in the surface layer are characteristics of this soil. At relatively gentle slopes, Mahtomedi loamy sand is suited for dwellings.

5.6.1.2 Pits, gravel

The pits, gravel soil map unit encompasses the majority and remainder of the Preferred Site and occurs where sand and gravel or weathered bedrock has been removed to a depth of at least several feet. Typically, the material remaining on the bottom and sidewalls of the pits is sand and gravel; weathered, soft sandstone; or gravelly and sandy material weathered from coarse grained granite. Any pits that once existed in this area have since been filled. The Preferred Site is currently a flat area used for laydown and parking.

5.6.2 Anticipated Soil Impacts

Storm water runoff from construction activities will drain into the existing storm water management system for the Weston Generating Station. To avoid and minimize soil erosion and sediment transport, erosion and sediment control best management practices (BMPs) will be used in accordance with the WDNR's Storm Water Construction and Post-Construction Technical Standards and requirements of the anticipated WDNR Construction Storm water permit. Further details will be provided in the Erosion Control and Storm Water Management Plan to be submitted to the WDNR for approval. Any excess soil accumulated during construction of the Facility foundations will be used onsite to the extent practicable. Onsite earthwork is designed to be balanced to avoid the need of offsite disposal.

5.6.3 Soil Mitigation

BMPs for erosion and sediment control will be used to minimize impacts to soil and potential erosion. Topsoil will be kept separate from subsoils and will be stockpiled separately from subsoils. Topsoil will

[6] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/tools/

be used after construction to resurface areas disturbed by construction activities. Compacted soils will be disked prior to final stabilization. The WDNR Storm Water Construction and Post-Construction Technical Standards will be used during construction and operation. A Wis. Stat. § 30.025 permit application will be submitted to the WDNR which will include details regarding soils management.

5.7 Historic Resources

The following sections discuss the historic resources within 0.5 mile of the Project boundary.

5.7.1 Construction Locations

The public land survey system locations being impacted by the proposed construction are displayed in Table 5-1.

Table 5-1: General Site Location

Site	Township	Range	Section	Quarter Sections
Preferred Site	27N	7E	3	Northeast
Alternate Site	27N	7E	3	Southeast
Electric and Gas Tie-ins	28N	7E	34	Southeast

5.7.2 Historical Resources Report

A cultural resource review of the Wisconsin Historic Preservation Database (WHPD) was completed, searched for registered historic structures, archaeological sites, cemeteries and prehistoric Native American burial sites, and other cultural resources within the Project Area of Potential Effects (APE) for direct effects (direct APE) and a 1-mile buffer surrounding the APE for indirect effects (indirect APE). The review was conducted to provide an initial cultural resources assessment of the Project and determine if additional cultural resources investigations would be required under Wis. Stats. §44.40 and §157.70. Wis. Stat. §44.40 states that archaeological sites and aboveground (architectural/historical) resources that are deemed to be significant can be protected during the course of State agency activities (grants, funding, permits, ground-disturbing projects). Under Wis. Stat. §157.70, all burials on non-federal public and private lands in the State are protected from disturbance.

The results of the review indicate that eight archaeological surveys have been conducted in the past within the direct Project APE, one mapped archaeological site has been found within the direct APE, and no historic structures are cataloged in the WHPD Architecture and History Inventory (AHI) within the direct APE. One historic structure is cataloged in the WHPD AHI within the indirect APE. Lastly, there are no

cemeteries or prehistoric Native American burial sites within the direct APE. A copy of this review was submitted to the State Historic Preservation Office ("SHPO") and assigned case #21-0369. SHPO has completed their review and found that no eligible properties will be affected (i.e. none are present or there are historic properties present but the project will have no effect upon them). It is their opinion that the proposed state undertaking may proceed as planned and they require that if the project plans change or cultural materials/human remains are found during the project, please halt work at that location and contact SHPO. (See Vol II App C for Correspondence with the SHPO).

5.7.3 Cultural Resource Surveys

The WHPD AHI was reviewed to determine if any cataloged archaeological sites are present within the Project boundary (direct APE). One archaeological site, MR-0023, has been cataloged in the WHPD ASI within the direct APE. Site MR-0023 is also known as the "Weston Power Station Workshop", is located within a wooded area and is not within either the Preferred or Alternate Site or any proposed laydown area, and the general area around this listed site will not be disturbed. A Phase 1 Survey of this site was completed in 1976. The WHPD database indicates that this site (MR-0023) has not been evaluated for listing in the National Register of Historic Places (NRHP).

The construction and operation at either the Preferred or Alternate Site or work at the laydown sites will not affect this archaeological site. Other than this single archaeological site, there are no other listed or mapped cultural, archaeological, or historic architectural properties within the Project boundary, and therefore no cultural, archaeological or historic property that would be affected by the construction and operation of the Facility.

If any archaeological or historic artifacts are found during construction, work will cease in the vicinity of the find, and the SHPO will be notified. Joint Applicants will coordinate with the SHPO to protect any potentially significant cultural resources and for the SHPO provide clearance to resume work at the find location.

5.8 Existing Vegetative Land Cover, Excluding Agricultural Uses

The following sections describe the existing vegetative land cover near the Sites.

To clarify, the "Project Area" or "Project Boundary" is the entire property, approximately 450 acres. A subset of that area is the "Project Study Area", which contains all proposed construction locations which is approximately 212 acres. The Project Study Area is that area that has been field delineated for wetlands and vegetation (see Volume I Appendix A [Project Boundary vs Project Study Area]).

The portions of the Project Area within the Project Boundary that are not included within the Project Study Area are those areas that will not be impacted by construction or land disturbance; to the east is the coal pile and existing generation facility buildings. To the south is the ATC Gardner Park 345-kV switching station and some forested areas. To the west are the mature forested areas and wooded wetlands along the river and to the north is a storm water basin, some grasslands, old field and scattered woodlots. All these areas are within the Project Boundary but are outside the Project Study Area. See Volume I Appendix A (Project Boundary vs Project Study Area) for a map that shows both boundaries on an aerial photo.

5.8.1 Existing Vegetation Communities

The existing vegetation communities in the Project Study Area consist mostly of fallow fields, some of which are mowed, and a few scattered tree lines and brush areas with a few small emergent/wet meadow wetlands.

The vegetation within the Project Boundary (outside of the Project Study Area) consists of fallow fields, some of which may be mowed, with large areas of mixed coniferous/deciduous forests along the Wisconsin River, and wooded wetlands within these forested areas. There are a few small tree lines scattered throughout the Project Boundary area. A map of the land cover is available in Volume I Appendix F (Project Study Area Environmental Land Cover).

5.8.1.1 Preferred Site

The Preferred Site is in the central portion of the WPSC Weston Generating Station property, within the Project Study Area, on the west side of the Weston Generating Station cooling towers and is currently an unused parking area. The site has been used previously for parking and materials laydown and currently has gravel surfacing. There is a small strip of grassland along the east side of the Preferred Site which consists of smooth brome, Kentucky bluegrass and switchgrass and is maintained by periodic mowing. A wetland delineation survey, completed in December 2020 by Stantec Consulting Services Inc. (Stantec), located a small emergent wet meadow wetland area that is in a roadside ditch that is located northwest of the Preferred Site and is dominated by reed canary grass (*Phalaris arundinacea*). Photographs of the Preferred Site are in Volume I Appendix A (Photograph Log).

5.8.1.2 Alternate Site

The Alternate Site is located along the southern boundary of the Weston Generating Station property within the Project Study Area and is immediately north of the ATC Gardner Park 345-kV switching station. The Alternate Site is currently an unused open field consisting of sparsely vegetated land that was

previously used as a laydown area for previous onsite capital projects. There are bare, gravelly patches throughout the site. Parts of the Alternate Site are old field, dominated by smooth brome grass. Photographs of the Alternate Site are in Volume I Appendix A (Photograph Log).

5.8.1.3 Laydown Yards

The laydown areas are identified in Volume I Appendix B (Site Arrangements) and will utilize existing land entirely within the Project Study Area. These areas are mostly old fields which are highly disturbed areas previously used for laydown yards, construction parking lots, and roadways. The old field areas are dominated by smooth brome. Some of the laydown areas are grasslands which are dominated by smooth brome, Kentucky bluegrass and switchgrass. The grasslands are generally maintained by mowing. Photographs of typical laydown areas are in Volume I Appendix A (Photograph Log).

5.8.1.4 Fuel Gas and 115kV Tie-in Sites and Linear Infrastructure

The 115kV electric tie-in location is an entirely developed area with no vegetation. The new overhead (OH) electric line will be placed on existing poles within the Project area, except for four new steel poles with a diameter of 36-inches. These poles are located on the north side of the property, between the substation and the Preferred Site. Three poles are within grasslands areas and the final pole is in an old field, which will also be used as a laydown area. Each pole will utilize a temporary construction installation area of approximately 20 feet by 20 feet (400 square feet).

The fuel gas tie-in location is primarily developed, with a small area of grasslands and a small stand of trees on the opposite side of the road from the tie-in location. We anticipate avoiding the removal of any trees during pipeline construction. A 12-inch diameter gas pipeline will supply fuel to the facility. A pipeline construction corridor width of 50 feet is used for estimating environmental impacts. We anticipate using open cut trenching for the majority of construction, although jack and bore will likely be used for the railroad crossing(s), and horizontal directional drilling may be used for access roads that have high traffic volume.

A map showing the location of the tie-in sites, location of fuel gas pipeline to the Preferred and Alternate Sites, the overhead electric line and four new poles is shown in Vol I, Figure H-3, Linear Infrastructure Map. Vegetation cover can be seen on Vol I, Figure F-3, Project Study Area Environmental Land Cover. No wetlands will be impacted by this construction.

5.8.1.5 Natural Communities

No forested lands will be impacted by the Project and no Natural Communities were identified within one-half mile of the Project boundary.

5.8.2 Land Cover Types

The types of land cover for the Sites were mapped using data obtained from WDNR Wiscland data (see Volume I Appendix F [Land Cover Map]). The land cover types at the Preferred Site include Developed, High Intensity and Developed, Low Intensity. The entirety of the Alternate Site is located within the Developed, High Intensity land cover type. The proposed laydown yards are located within the Developed, High Intensity land cover type, except for a small portion which is Developed, Low Intensity.

A vegetative land cover map was completed for the Project Study Area (a smaller subset of the Project Area, which includes only the construction areas (see Volume I Appendix A [Project Boundary vs Project Study Area]). This map was developed using field confirmed data. The map indicates that the Preferred Site is predominately developed, with a small area of grassland along the border and the Alternate Site is both predominately old field and partially developed. The various laydown areas are a mix of predominately developed areas and old field, with small areas of grasslands (see Volume I Appendix F [Project Study Area Land Cover Map]). Old field areas are dominated by smooth brome grass (*Bromus inermis*). See Tables 5-2 and 5-3.

Table 5-2: Land Cover Categories within Project Study Area

Land Cover Categories within Project Study Area (acres)		
Land Cover Classification		**Acres**
Agriculture	Cropland	0.000
	Specialty Crops	0.000
Non-Agricultural Upland	Grassland	79.859
	Upland Wooded	6.931
	Fallow Field	24.903
Wetlands/Waterbodies	Forested Wetland	0.000
	Non-Forested Wetland	1.511
	Open Water	0.103
Developed Land	Residential	0.000
	Developed/Urban	99.455
	Project Study Area Total	212.762

Table 5-3: Land Cover Impacts within Project Boundary Area

Land Cover Impacts Within Project Design Areas																
Land Cover Classification	Preferred or Alternate Site, or Common*	Preferred and Alternate Sites		Construction Laydown		Construction Parking		Approximate Location of 115kV Tie-ins		Approximate location of 4 New 115kV poles		Approximate Location of Fuel Gas Tie-in		Approximate Location of 50' wide gas pipeline corridor	
		Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
Non-Agricultural Upland (Wooded)	Preferred														
	Common														
	Alternate														
Non-Agricultural Upland (Prairie/ Grasslands/ Pasture/ Fallow Field)	Preferred	0.668			1.065		0.325							0.093	0.863
	Common				6.369			0.001		0.027			0.219		
	Alternate	4.017			4.508		1.733							0.131	3.134
Developed and Residential (includes road ROW)	Preferred	3.843			1.709		2.184							0.100	1.123
	Common				0.640				2.611	0.009			0.649		
	Alternate	0.522			0.752		1.526								3.046
Total	Preferred	4.511	0.000	0.000	2.774	0.000	2.509	0.000	0.000	0.000	0.000	0.000	0.000	0.193	1.986
	Common	0.000	0.000	0.000	7.009	0.000	0.000	0.001	2.611	0.036	0.000	0.000	0.868	0.000	0.000
	Alternate	4.539	0.000	0.000	5.260	0.000	3.259	0.000	0.000	0.000	0.000	0.000	0.000	0.131	6.180

NOTE: Agricultural Row/Crops, Wetlands, and Waterbodies are not included in this table as there are zero impacts to those types of land cover and/or that land cover type is not present within the Project Boundary

* Common: refers to locations that will be used for construction regardless of whether the Preferred Site or Alternate Site is chosen

5.8.3 Animal and Plant Species

The Project Study Area is a subset area within the overall Project Boundary (see Volume I Appendix F [Project Study Area Land Cover Map]). The Project Study Area contains the Preferred and Alternate Sites and all proposed construction activities as well as portions of the pre-existing Weston Generating Station facilities. The habitat within the Project Study Area is relatively poor and consists mainly of the old field and grassland habitats with scattered tree lots. (see Volume I Appendix A [Photograph Log] and Volume I Appendix F [Project Study Area Land Cover Map]).

The grassland areas are dominated by smooth brome, Kentucky bluegrass and switchgrass (*Panicum virgatum*). This land cover type appears to be maintained regularly by mowing. Old field areas consist of highly disturbed areas previously used for laydown yards, construction parking lots, and roadways. These areas are dominated by smooth brome (*Bromus inermis*). The scattered woodlots are dominated by red oak (*Quercus rubra*), white pine (*Pinus strobus*), Jack pine (*Pinus banksiana*), black cherry (*Prunus serotina*), paper birch (*Betula papyrifera*), Pennsylvania sedge (*Carex pensylvanica*), and smooth brome.

Between the poor habitat and lack of vegetative diversity, it is unlikely that many animal species are present within the Project Study Area on a year-round basis. It is more likely that wildlife pass through the area or use the area for a temporary stopover as they move between habitats located outside the Project Study Area. Species that can tolerate human activity are likely present such as rodents, squirrel, raccoon, rabbit, deer, coyote and a variety of common bird species.

The larger Project Area is a mix of industrial use and both disturbed and undisturbed habitat. The area that is outside of the Project Study Area, yet remains in the Project Boundary, includes undisturbed wooded riparian areas along the Wisconsin River. These woodlands and wetlands provide a variety of habitat with the river providing connection to other habitat outside the property. The vegetative diversity

within the woodlands provides den and nesting areas, cover, and various food sources for wildlife. This habitat will support a variety of species, including insects, herptiles, birds and mammals as well as provide good temporary stopover habitat. The river provides a connection to other habitats and a travel corridor for wildlife as well as additional food sources and habitat. The river also likely supports a migratory corridor, and a greater variety of bird species using the corridor during spring and fall migration. With the variety of habitat and river corridor, these wooded areas and wooded riparian areas likely host a large variety of wildlife throughout the year. These forested riparian areas within the Project boundary will not be disturbed by any construction activity.

5.8.4 Expected Impacts to Plant and Animal Habitats and Populations

Construction and operation of a Facility at either the Preferred Site or Alternate Site and their laydown areas would result in the permanent loss of very little vegetation or wildlife habitat; no animal populations are likely to use the Sites as preferred habitat. Some of the wildlife communities that may pass through the vicinity of the Sites will be temporarily displaced to surrounding areas where habitat is available. Additionally, wildlife is known to pass through construction areas at night when there is no activity (based on wildlife tracks left at other construction sites). The Project Study Area has already experienced habitat fragmentation associated with development in and around the Weston Generating Station so we do not anticipate that this additional Facility will cause significant loss of wildlife habitat, habitat fragmentation or impacts to local wildlife populations.

As there is a generation station currently operating at the site, species present on the property are likely acclimated to the sound and human activity that occurs daily. Adding another generation facility should not result in increased avoidance by those species currently present.

5.8.5 Forest Lands

There are approximately 6.9 acres of woodlands within the Project Study Area which includes the Preferred and Alternate Sites and laydown areas (see Volume I Appendix A [Project Boundary vs Project Study Area]). This acreage is broken up into smaller woodlots distributed throughout the Project Study Area. This land cover type is located between developed areas and grassland areas. These areas were dominated by red oak (*Quercus rubra*), white pine (*Pinus strobus*), Jack pine (*Pinus banksiana*), black cherry (*Prunus serotina*), paper birch (*Betula papyrifera*), Pennsylvania sedge (*Carex pensylvanica*), and smooth brome.

There are large forested areas within the Project boundary, outside of the Project Study Area (see Volume I Appendix A [Project Boundary vs Project Study Area]). These forested areas are generally located along the Wisconsin River and will not be disturbed by construction.

5.8.6 Potentially Affected Forest Lands

No forest lands are present within the Preferred and Alternate Sites or laydown areas; therefore, no forest land impacts will occur due to Project construction in those areas. There is a small stand of a few trees along the edge of the Fuel gas tie-in location; we expect to be able to avoid impacting these trees during construction. Other forested lands that are within the Project boundary will not be impacted by any construction activities.

5.8.7 Forest Land Mitigation

No forest lands are within the Preferred or Alternate Sites, laydown or parking areas. A small stand of a few trees is within the fuel gas tie-in location, on the opposite side of the road from the tie-in location, but we expect to avoid impacting those trees with gas pipeline construction. No forested areas will be disturbed by construction; therefore, no forest land impacts will occur due to Project construction and mitigation actions are not necessary.

5.8.8 Grasslands

Grasslands that may have been historically present within the Preferred and Alternate Sites were permanently disturbed when the Sites were converted to parking and construction laydown areas for past capital projects associated with the Weston Generating Station. There are both grassland areas and old fields within the Project boundary. The grassland areas are dominated by smooth brome, Kentucky bluegrass and switchgrass (*Panicum virgatum*). This land cover type appears to be maintained regularly throughout the year by mowing and is located between developed portions of the Project Study Area. Old field areas consist of highly disturbed areas previously used for laydown yards, construction parking lots, and roadways. These areas are dominated by smooth brome (*Bromus inermis*).

5.8.9 Potentially Affected Grasslands

The Preferred Site is predominately a gravel parking lot with some maintained grasslands around the edges. The Alternate Site is predominately an old field consisting of a disturbed, sparsely vegetated area. The laydown areas are a mix of predominately developed land and old fields. There are some small areas of grassland within proposed laydown areas. Three new overhead electric poles will be placed in grasslands and one in an old field (also proposed for construction laydown), and a portion of the gas fuel pipeline will be constructed in grassland and old field areas. The grassland areas are dominated by smooth

brome, Kentucky bluegrass and switchgrass (*Panicum virgatum*) and are generally mowed on a periodic basis. The old field areas are dominated by smooth brome (*Bromus inermis*) and are generally left fallow.

Permanent impacts to grasslands and old field include 0.668 acres at the Preferred Site, 4.017 acres at the Alternate Site, and 0.027 acres for installation of two new overhead electric poles. Temporary impacts include a total of 7.759 acres construction laydown and parking for the Preferred Site, 12.613 acres for laydown and parking at the Alternate Site. Temporary impacts also include installation of the fuel gas pipeline, in a 50 foot width corridor. Most of the gas pipeline, for both the Preferred and Alternate Sites will be installed in areas that will already be disturbed as part of construction (laydown and parking areas or previously developed areas). The gas pipeline to the Preferred Site will disturb 0.748 acres of grassland

5.8.10 Grassland Mitigation

Some areas of old fields and grasslands will be temporarily disturbed during construction and reestablished after construction is complete. A small strip of grassland will be lost by construction of the Preferred Site. Only those areas required for construction purposes will be disturbed.

Construction activities will use WDNR technical standards for stormwater and erosion control. All the old field and grassland areas will have their topsoil stripped and stockpiled, then gravel placed on the subsoil for laydown and parking activities. Upon completion of construction, these grassland locations will be decompacted and the topsoil replaced. The disturbed site will be seeded with an annual cover crop (as needed) and Wisconsin Department of Transportation (WisDOT) Mix No. 20 to revegetate the disturbed sites.

5.8.11 Re-Vegetation and Site Restoration Plan

The following sections describe the re-vegetation and site restoration plan for the Project.

5.8.11.1 Proposed Re-Vegetation

During construction, portions of the Project site will be cleared, grubbed, graded, and excavated. Certain areas will have permanent facilities constructed, while other areas such as the pipeline and laydown areas will be revegetated. In areas not impacted by these activities, existing vegetation will be preserved where practicable as an erosion control BMP. The amount of soil exposed during construction will be minimized. Seed mixtures will be selected to produce dense vegetation based on soil and site conditions, along with intended final use. In areas where restoration is required, seeding and mulching will be completed in accordance with WDNR Technical Standard 1059 – Seeding for Construction Site Erosion Control and Wis Admin. Code NR 40, regarding noxious weed seed content and labeling, and Wisconsin Department of Transportation (WisDOT) Mix No. 20 as described in WisDOT Table 630-1.

Temporary seeding will be applied to areas of exposed soil where the establishment of vegetation is desired, but the areas have not been brought to final grade or on which land-disturbing activities will not be performed for a period greater than 30 days, but vegetative cover is required for less than 1 year. Areas needing protection during periods when permanent seeding is not applied, must be seeded with annual species. This will minimize erosion and non-native, invasive (or weedy) species propagation.

5.8.11.2 Vegetative Monitoring Criteria

Final stabilization is achieved when all soil-disturbing activities at the site have been completed and a uniform (i.e., evenly distributed, without large bare areas) perennial vegetation cover with a density of 70 percent of the preconstruction background vegetative cover has been established on all unpaved areas or areas not covered by permanent structures or with alternative surfacing, such as riprap or crushed rock as required by the WDNR standards.

During construction, areas that have been seeded will be inspected by a qualified person at least once every 7 days and within 24 hours after every precipitation event that produces 0.5 inch of rain or more during a 24-hour period. Where areas of concern are identified, the area will be re-seeded and maintained until reaching the required density. The Project site will be inspected at least once per month, as part of the weekly inspections, to monitor vegetative growth until final stabilization is achieved after construction and stabilization activities are complete.

5.8.11.3 Invasive Species Monitoring and Management

Joint Applicants will comply with Wis. Admin. Code NR 40 – Invasive Species Identification, Classification and Control throughout construction of this project. WPSC will minimize the potential spread of species listed in NR 40 beyond their known boundaries throughout the duration of the Project construction and restoration.

5.9 Invasive Species (Uplands and Wetlands)

A discussion of invasive species in both uplands and wetlands on the Project site is provided in the following sections.

5.9.1 Invasive Species Areas

Within the Project Study Area, spotted knapweed (*Centaurea stoebe*), narrow-leaved cattail, and reed canary grass were identified. These species were found in scattered locations throughout the Project Study Area, in ditchlines, grasslands and old fields. No woodlands will be impacted by construction, therefore no inspection for diseases or invasive species occurred in woodland areas.

5.9.2 Invasive Species Mitigation Measures

In compliance with Wis. Admin. Code NR 40 – Invasive Species Identification, Classification and Control, Joint Applicants will mitigate the potential to spread invasive species during Project activities. Joint Applicants will identify invasive species locations on the final construction plans and flag them onsite to avoid during construction, where feasible. In areas where impacts to the invasive species are unavoidable, Joint Applicants will require that equipment be cleaned prior to moving from an infested area to a non-infested area. Invasive species found within the Project Study Area were spotted knapweed (*Centaurea stoebe*), narrow-leaved cattail, and reed canary grass.

Construction equipment brought onsite will be required to be free of muck and invasive species. Equipment cleaning will primarily be conducted by brush, broom, or other hand tools at the Project site. Joint Applicants may periodically require equipment to be cleaned by compressed air. Equipment used during ground-disturbing activities will be cleaned prior to leaving the Project site to reduce the risk of spreading invasive species beyond the site.

In accordance with Wis. Admin. Code NR 40 and the Department of Agriculture, Trade and Consumer Protection (DATCP), seed mixtures that contain potentially invasive species or species that may be harmful to native communities will be avoided. Seed will be tested for purity, germination, and noxious weed seed content, and will meet the minimum requirements prescribed in the current edition of *Rules for Testing Seed*, published by the Association of Official Seed Analysts.

5.10 Rare Species, Natural Communities, and WDNR/USFWS Endangered Resource Reviews

The rare species, natural communities, and endangered resources identified near the Sites are discussed in the following sections.

5.10.1 WDNR and USFWS Communication

The USFWS Information for Planning and Consultation System (IPaC) is a tool to assist project proponents in increasing the compatibility of their activities with the conservation of USFWS trust resources and streamlines delivery of section 7 consultation. The IPaC was used to develop an official species list document for the Project. The IPaC indicated that one federally listed mammal species and one bird species are potentially affected by activities in this Project area location (see Volume II Appendix E) for the IPaC document. Generally, an official species list requested through IPaC is considered to be a USFWS official response under the ESA, unless a Federal permit action is necessary.

Based on the results from the IPaC review, no additional actions are necessary to protect federally listed resources.

A Certified Endangered Resources Review was submitted to the WDNR and approved by the agency.

5.10.2 WDNR Endangered Resources Review

The results of the WDNR Endangered Resources (ER) Review indicate an "element occurrence" is present within the Project boundary (the peregrine falcon nest box). Additional element occurrences are present outside the Project boundary. A copy of the WDNR approved Certified ER Review is included in Volume III Appendix A (CONFIDENTIAL).

5.10.3 NHI Occurrences

See Volume III Appendix A (CONFIDENTIAL) for a map showing NHI occurrences.

5.10.4 Habitat Assessments and Biological Surveys

A habitat assessment or biological survey was not required for any listed species.

5.10.5 WDNR-Identified Follow-up Actions

The following sections describe the WDNR-identified actions for the Project that are required to comply with State and/or Federal endangered species laws and those actions that are recommended.

5.10.6 WDNR-Identified Recommended Actions to be Incorporated

The following sections describe the WDNR-identified actions for the Project that are recommended to help conserve Wisconsin's rare species and high-quality natural communities. No impacts are expected to unique vegetation communities that are tracked by the NHI. The WDNR recommended actions be taken to avoid and minimize the spread of invasive species, which is outlines in section 5.9 above.

5.10.6.1 Bald Eagle

While the bald eagle was removed from the Federal Endangered Species list in August 2007, it is still federally protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Eagles can be sensitive to human disturbance, especially during the breeding and nesting seasons.

According to WDNR NHI data, four active or inactive bald eagle nests have been recorded within one mile of the Project area, but not within the Project boundary. They are more than 1,000 feet away from the Project boundary. If, in the future a nest is found on or adjacent to the Project boundary, we will

follow the USFWS National Bald Eagle Management Guidelines (2007), that human activity within 660 feet of an active nest should be avoided from January 15 – July 30.

5.10.6.2 Peregrine Falcon

There is a state-listed endangered peregrine falcon nesting box at the existing Weston Generating Station, located at the north side of the Project area that is managed by WPSC personnel and their contractors for successful propagation of wild peregrine falcons. The nest box is located approximately 1,000 feet from the Preferred Site and approximately 3,000 feet from the Alternate Site. This nesting box has successfully fledged chicks in the past and one egg has been laid as of early April 2021. The nest box will not be moved or otherwise physically impacted by construction at either the Preferred or Alternate Site or any project related activities. The ERR does not include any restrictions on the project due to the falcon's presence.

5.10.6.3 Blanding's Turtle

According to NHI data, the state-listed special concern Blanding's turtle habitat has been previously observed at a wetland on the west side of the Wisconsin River, which is located outside the Project boundary. There is the possibility that suitable wetland habitat exists within the Project boundary, most likely the riparian wetlands along the river. There are no wetlands within the Preferred or Alternate Sites or associated construction areas. This project will not impact wetlands which are the typical overwintering and non-overwintering habitat.

The WDNR recommends protection of nesting habitat by avoiding any construction activities within 275 m (900 feet) of a wetland or waterbody during nesting season (May 20 – October 15). This recommendation will be followed, and if this avoidance is not possible, we will install and maintain exclusion fencing between October 16 and May 19 as per the WDNR Amphibian and Reptile Exclusion Fencing Protocol. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained to avoid impacts to this species.

If any turtles are found during construction regardless of species or location on the site, they will be relocated by hand to an undisturbed wetland area outside of the construction area. We do not expect the project to impact any turtle species.

5.11 Wetlands and Permits

Wetlands and the required permits for impacting wetlands are discussed in the following sections.

5.11.1 Waterway and Wetland WDNR and USACE Permit Application

No state or federal wetland or waterway permits are anticipated to be required for this project. We do not anticipate temporary or permanent impacts to any wetlands by the Project construction or operation. Wetlands located near construction areas will be protected by silt fence and orange snow fence.

5.11.2 WDNR Waterway/Wetland Impact Location and Inventory Tables

The WDNR Waterway/Wetland Impact Location and Inventory Tables are included in Volume II Appendix D.

5.11.3 Wetland Practicable Alternatives Analysis

As no wetlands will be temporarily or permanently impacted by this project, a practicable alternatives analysis is not required.

5.11.3.1 Site Selection Process

As previously described in Section 1.4, preliminary site selection were based on a number of factors including the following: existing facilities on the site, the transmission infrastructure and the natural gas infrastructure and avoidance of natural and cultural resources.

5.11.3.2 Avoidance and Minimization of Wetland Impacts

This industrial site has many areas that have been previously disturbed. As described in Section 5.11.4 below, this site includes previously disturbed areas that include a few small, scattered wetlands. There are undisturbed riparian woodlands within the woodlands along the river. In order to avoid as many wetlands impacts as possible, site selection focused on previously disturbed areas, rather than the undisturbed woodlands, as the wooded wetlands were larger and likely have higher functional values than the small, scattered wetlands. Following the selection of the Sites, we were able to design the Project layouts to avoid wetlands.

5.11.3.3 Alternatives Not Practicable

The current proposed Project does not temporarily or permanently impact wetlands. Therefore, no additional alternative sites or layouts are required.

5.11.3.4 Impacts, Construction Methods, and Restoration Methods

No waterways are located within the Project boundary and there will be no waterway impacts. All wetlands will be avoided and there will be no temporary or permanent impacts to wetlands. Wetlands near construction areas or access roads will be protected with silt fence or hay bales as appropriate to minimize

the potential for surface runoff into the wetland using the WDNR Technical Standards and with orange snow fence to increase visibility.

5.11.4 Wetland Delineations

A map of wetlands within the Project boundary using the WDNR Surface Water Viewer is located in Volume I Figure L-1, and a map of the delineated wetlands within the Project Study Area is located in Volume I Figure L-2.

A wetland delineation survey was performed in December 2020 by Stantec (see Volume II Appendix D [Wetland Delineation Report]). The wetland delineation did not encompass the entire Project boundary; the delineation was completed in the Project Study Area. A map showing the project boundary location versus the wetland survey boundary (called "the Project Study Area") is included in Volume I Appendix A (Project boundary vs Project Study Area). The Wisconsin Wetland Inventory map indicates wooded wetlands within the Project boundary located in the non-delineated forested areas next to the Wisconsin River. The wetland delineation map shows the location of these wetlands. The woodlands adjacent to the Wisconsin River were not included in the delineation survey, and therefore not field inspected for wetlands, as these woodlands are off-limits for construction activity and will not be impacted. Portions of the north and east project boundary (outside of the Project Study Area) were also not surveyed for wetlands as no construction activities would occur at those locations.

The delineation within the Project Study Area found a total of five additional wetlands (1.511 acres total) present that are not on the Wisconsin Wetland Inventory map. A field confirmation of the wetland delineation will be completed in Spring 2021 during the growing season and provided to the WDNR for concurrence.

A wetland delineation report with detailed wetland information, datasheets, photographs, and maps is included as Volume II Appendix D (Wetland Delineation Report).

One wetland (totaling 0.007 acre, approximately 320 square feet) is located adjacent to the Preferred Site and will not be disturbed. No wetlands were delineated within or immediately adjacent to the Alternate Site, any proposed laydown sites, the proposed transmission or gas pipeline corridors.

The wetland delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (1987 Manual; Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (Regional Supplement; U.S. Army Corps of Engineers, 2010). Where possible, sample plots were established at

multiple locations (both wetland and upland locations) and Wetland Determination Data Forms from the Regional Supplement were completed to characterize both Sites. Generally, sample plots were placed in the wetlands and adjacent uplands. Data forms and photographs for these identified features were surveyed using a sub-meter-accurate GPS unit.

5.11.5 Significant or High-Quality Wetlands

As reported in the Wetland Delineation Report, the wetlands in the delineated Project Study Area contained wet meadow plant communities and are considered degraded due to historic grading activities and in some cases the presence of invasive species and riprap materials. The wetland report indicated that these wetlands have low functional quality.

The wooded wetlands along the Wisconsin River have higher functional qualities, due to the type of wetland (wooded) and their locations as riparian wetlands. These wooded wetlands are within the Project boundary but are outside the boundary of any proposed construction activity and outside of the Project Study Area. The entire wooded areas adjacent to the river, which include the wooded wetlands, will be avoided throughout construction.

Wisconsin Chapter NR 103.04 defines unique and significant wetlands as "identified in special area management plans, special wetland inventory studies, advanced delineation and identification studies and areas designated by the U.S. Environmental Protection Agency (EPA) under Section 404 (c), 33 USC 1344 (c)". No special wetland designations as outlined in Wisconsin Chapter NR 103.04 are applicable for wetlands in the proposed Project boundary.

5.12 Water

The following sections discuss water intake, consumption, discharge, and storm water management.

5.12.1 Existing Waterbodies and Waterways

A description of existing waterbodies and waterways near the Sites is provided in the following sections.

5.12.1.1 Waterbodies and Waterways

The Wisconsin River is located along the western boundary of the Weston Generating Station property. No other waterways were identified on the wetland delineation survey within the Project Study Area, performed in December 2020, on the Weston Generating station property. The WDNR Surface Water Viewer identifies three open water basins within the Project Boundary (see Volume I Appendix J-1, Project Waterways). There are two basins near the north Project boundary. These are constructed storm water basins that were re-graded in the past and are now a single maintained grassy basin. The map also

shows a tiny basin (located near the word "Wisconsin River" on Figure J-1, Project Waterways). This appears to be a wetland ephemeral basin within the wetland at this location. Within one-half mile of the Project boundary is a mapped open water basin located east of Old Highway 51, near Kowalski Road and US Highway 51. As shown on the map, there does not appear to be any waterways connected to this basin.

There are multiple constructed basins on the site that are actively used by the existing Weston generation facilities. These basins are not identified on the DNR Surface Water Viewer. These maintained basins are used for the storage and treatment of storm water and wastewater prior to discharge to the Wisconsin River as authorized by the WPDES permit for the facility. These basins store various wastewaters such as coal pile runoff, metal cleaning wastewater, bottom ash transport water and other low volume wastewaters generated at the site. These basins will not be modified or impacted by the construction or operation of the units.

5.12.1.2 Navigable Waters of the State

Based on the definitions of Wis. Stat., Chapter 30 "*Navigable Waters, Harbors, and Navigation*", the Wisconsin River is classified as being a Navigable Water of the State. It is also listed a navigable water of the U.S. under U.S. Army Corps of Engineers (USACE) jurisdiction. No other waterways, wetlands, or waters within or immediately adjacent to the Project boundary are considered navigable waters.

5.12.1.3 Other Waterways

The following sections discuss waterways that are considered outstanding or exceptional, trout streams, or wild and scenic rivers.

5.12.1.3.1 Outstanding or Exceptional Resources Waterbodies/Waterways

The closest waterway under this definition is an Exceptional Resource Water, Fourmile Creek, which is approximately 6 miles west of the Project boundary (see Volume I Appendix L [Outstanding or Exceptional Waterways, Trout Streams, or Wild or Scenic Rivers]). Considering the distance from this waterway, it is anticipated that construction and operation of the Project will not result in any impacts to this waterway or any other listed Outstanding or Exceptional Resource Waters. No avoidance, minimization, or mitigation measures are proposed.

5.12.1.3.2 Trout Streams

Black Creek is the only trout stream located within 10 miles of the Project boundary. It is located approximately 0.3 miles from the Project boundary to the west and separated from the Project boundary

by the Wisconsin River. Considering the distance from the waterway, it is anticipated that construction and operation of the Project will not result in any impacts to this trout stream. No avoidance, minimization, or mitigation measures are proposed (see Volume I Appendix L [Outstanding or Exceptional Waterways, Trout Streams, or Wild or Scenic Rivers]).

5.12.1.3.3 Wild or Scenic Rivers

There are no federally or State-designated wild or scenic rivers in Marathon County. No avoidance, minimization, or mitigation measures will be required (see Volume I Appendix L [Outstanding or Exceptional Waterways, Trout Streams, or Wild or Scenic Rivers]).

5.12.1.4 Potential Impacts to Waterbodies/Waterways

Project activities on the Preferred or Alternate Sites will not impact waterbodies/waterways. No work is proposed in or adjacent to the Wisconsin River, the only navigable waterway on or adjacent to the project site. All earth-moving activities will be completed using the WDNR technical standards for erosion and storm water controls to control sedimentation and runoff, so we do not anticipate any from construction impacting the Wisconsin River.

5.12.1.5 Methods for Crossing

No work is proposed in or adjacent to the Wisconsin River, the only navigable waterway on or adjacent to the project site. No waterbodies/waterways will be crossed for access purposes at either the Preferred or Alternate Site or any proposed laydown areas.

5.12.1.6 Avoidance, Minimization, and Mitigation Methods of Waterway Impacts

No work is proposed in or adjacent to the Wisconsin River, the only navigable waterway on or adjacent to the project site. No other waterways are within or adjacent to the Preferred Site and Alternate Site boundaries or any proposed laydown sites.

5.12.2 Potential Water Sources

The following sections provide information on the potential water sources required for the Project.

5.12.2.1 Water Sources

Service water and domestic use water will be provided by the existing potable water source on the Weston Generating Station site, which is the Village of Kronenwetter municipal water supply system.

5.12.2.2 Water Usage

The primary service water uses for the Facility will include water for refilling the closed cooling water systems associated with each engine as evaporation occurs over time and periodic spray washes of the compressor side of the engine turbocharger. Potable water will be provided to the control room, break rooms, restrooms, office areas, including plumbed safety showers and eyewash stations located in the engine hall building and in the tank enclosure building. The Facility water systems will be designed to maximize water reuse and recycling and minimize water consumption within the Facility systems. Refer to Figure 3-2: Water Balance at Maximum Load for a diagram of the water usage.

5.12.2.3 Low-Capacity Onsite Well Sources

No low-capacity onsite well sources will be used for the Project.

5.12.2.4 High-Capacity Onsite Well Sources

No high-capacity onsite well sources will be used for the Project.

5.12.2.5 Municipal Water Utility Groundwater Sources

Potable water for the Project will be obtained from the Village of Kronenwetter municipal water supply. The Village of Kronenwetter sources its water from two gravel packed wells. Well #1 is 90 feet deep and has a pumping capacity of 650 gallons per minute. Well #2 is 80 feet deep and has a pumping capacity of 650 gallons per minute.

5.12.2.6 Methods Proposed for Delivering Municipal Water to Facility Sites

Potable water will be provided to the Facility by the existing potable water connection on the Weston Generating Station site. The following sections provide additional detail related to delivery of municipal water to the alternative sites.

5.12.2.6.1 Size of Pipeline

The potable water pipeline will tie into the existing system.

5.12.2.6.2 Proposed Route

New pipelines will be constructed from existing facilities on the Weston site to the final project site and will be installed on land currently owned by the Joint Applicants.

See Volume I Appendix H (Linear Infrastructure) for a map of proposed pipeline corridors.

5.12.2.6.3 Length of Pipeline

The length of pipeline to the Preferred Site from the tie-in point will be approximately 2,000 feet. The Alternate Site pipeline to the tie-in point will be approximately 5,000 feet in length.

5.12.2.6.4 Entity that will Construct, Operate, and Own the Pipeline

The water supply pipeline for the Project will be installed exclusively on property owned by WPSC and will be operated by the Joint Applicants.

5.12.2.6.5 Property Owners along Pipeline Route

The water supply pipeline for the Project will be installed exclusively on WPSC property.

5.12.2.7 Surface Water Sources

The Project will only receive water from the Village of Kronenwetter municipal potable water supply. As such, the Project will not directly draw from surface water sources.

5.12.3 Water Consumptive Use

The following section discuss consumptive water usage for the Project.

5.12.3.1 Source of Water

For both Sites, all water will be pumped from the existing potable supply at the Weston Generating Station, which is sourced from the Village of Kronenwetter municipal water supply system.

5.12.3.2 Consumptive Water Usage

The primary service water uses for the Facility will include water for refilling the closed cooling water systems associated with each engine as evaporation occurs over time and periodic spray washes of the compressor side of the engine turbocharger. Potable water will be provided to the control room, break rooms, restrooms, office areas, including plumbed safety showers and eyewash stations located in the engine hall building and in the tank enclosure building. The Facility water systems will be designed to maximize water reuse and recycling and minimize water consumption within the Facility systems.

5.12.3.3 Total Consumptive Use/Net Loss of Water

The closed loop cooling system consumes a minimal amount of water, typically 2 gallons per engine per week.

5.12.4 Wastewater Discharges

The following sections describe wastewater handling for the Project.

5.12.4.1 WDNR WPDES Permit Application

No wastewaters will be discharged to surface waters of the State; therefore, the Project does not require a WPDES Permit for operation.

5.12.4.2 Proposed Wastewater Discharge Structures

Process wastewater used for the Project will be collected onsite and stored in an above grade tank within a concrete containment. All process wastewater generated by the project will be removed and treated offsite by a third-party contractor. Sewage will be discharged to the Village of Kronenwetter municipal sewer system for offsite treatment.

5.12.4.3 Wastewater Chemical and Physical Attributes

Process wastewater will be removed and treated offsite and is not required to meet pretreatment requirements.

5.12.4.4 Surface Water Discharges

The Project will not discharge process or sanitary wastewaters to surface waters of the State. Storm water runoff from the Project site will discharge to the existing onsite storm water management system for the Weston Generating Station.

5.12.4.5 Municipality Discharges

Sanitary wastewater from bathrooms, showers, and other employee areas would be collected and routed to a lift station, which would discharge to the Village of Kronenwetter municipal sewer system for offsite treatment. No process wastewaters will be discharge to the municipal system.

5.12.5 Storm Water Management

A discussion of State and local storm water management requirements, the required Erosion Control and Storm Water Management Plan for Project construction, and the proposed storm water management facilities for the Project site is provided in the following sections.

5.12.5.1 Erosion Control and Storm Water Management Plan Permit Application

In the State of Wisconsin, projects that will disturb 1 or more acres of land must obtain coverage under the WPDES General Permit No. WI-S067831-5 (WPDES General Permit), which authorizes the discharge of storm water associated with land-disturbing construction activities into State waters. Coverage under the WPDES General Permit is obtained by developing an Erosion Control and Storm

Water Management Plan and submitting a Water Resources Application for Project Permits (WRAPP)[7] to the WDNR for approval prior to the start of Project construction.

The Village of Kronenwetter does not have additional regulations or permitting requirements related to erosion control and storm water management.

5.12.5.2 Erosion Control and Storm Water Management Plan

Prior to Project construction, the Erosion Control and Storm Water Management Plan, including descriptions and typical drawings of BMPs, will be provided. It will be formatted and designed to meet or exceed compliance with the erosion control and storm water management technical standards and the construction and post-construction performance standards identified in Wis. Admin. Code NR 151 and 216. The Erosion Control and Storm Water Management Plan addresses both the control of sediment and pollutants during construction until site stabilization is complete and the storm water management practices that will be installed during the construction phase to address the discharge of total suspended solids, control peak flow, provide for infiltration, and maintain protective areas during Facility operation. Site-specific plans will be developed during the final design phase of the Project and provided to the WDNR for review and approval prior to commencement of construction.

5.12.5.3 Proposed Storm Water Management Facilities

No new storm water management facilities are proposed for the Project. Storm water runoff from the Project site will drain to the existing storm water management system for the Weston Generating Station.

5.12.5.3.1 Onsite Wastewater and Storm Water Treatment Facilities

No onsite wastewater and storm water treatment facilities are proposed for the Project. Process water will be removed and treated offsite by a third-party contractor, as needed, and storm water runoff from the Project site will drain to the existing storm water management system for the Weston Generating Station.

5.12.5.3.2 Solid/Sludge Generation

Any solid wastes or sludge generated during Facility operations will be disposed of offsite at an authorized waste disposal facility.

[7] A WRAPP is also referred to as a Notice of Intent.

5.12.5.3.3 Pretreatment Facilities

Process wastewater will be removed and treated offsite, as required. No pretreatment facilities will be required.

5.12.5.3.4 Estimated Amount of Flow

No new storm water management facilities proposed. Ditches will tie into existing system.

5.12.5.3.5 Location of Collection and Discharge

Process wastewater will be collected onsite and stored in an above grade tank within a concrete containment. All process wastewater generated by the project will be removed and treated offsite by a third-party contractor, as needed. Storm water runoff from the Project site will drain to the existing storm water management system for the Weston Generating Station. The locations of the storm water ditches/swales are shown on the site arrangement drawings in Volume I Appendix B (Site Arrangements).

5.12.5.3.6 Storm Water Management Plan for Fuel Handling and Storage Facilities and Ash Handling and Disposal Facilities

No coal or solid biomass will be used by the Project.

5.12.5.3.7 Erosion Control Plan

A copy of the Erosion Control and Storm Water Management Plan, including descriptions and typical drawings of erosion and sediment control best management practices, will be provided for WDNR review prior to construction.

5.13 Air Quality

Pursuant to the requirements specified in the Wis. Admin. Code NR 405, a PSD construction permit application will be submitted.

5.13.1 WDNR Air Permits

The Weston Generating Station is a major stationary source under the PSD program because the potential to emit for at least one PSD pollutant is greater than 100 tons per year. The Project will require a major construction permit under the PSD program because potential emission increases are projected to exceed PSD significant emissions increase thresholds for several regulated pollutants.

The PSD major construction permit application contains the following analyses/assessments regarding emissions of regulated pollutants associated with the construction and operation of the Project.

- Evaluation of ambient air quality in the area for each regulated pollutant for which the Project will result in a significant net emissions increase
- Demonstration that emissions increases resulting from the Project will not cause or contribute to an increase in ambient concentrations of pollutants exceeding the remaining available PSD increment and the National Ambient Air Quality Standards (NAAQS)
- Assessment of any adverse impacts on soils, vegetation, visibility, and growth in the area
- A Best Available Control Technology analysis for each proposed emissions unit which may emit CO, PM, PM_{10}, $PM_{2.5}$, VOC, or greenhouse gas (GHG) emissions. The project will be a PSD synthetic minor for NOx emissions.

5.13.2 Fuel Type

The Project will be fueled by only natural gas.

5.13.3 Air Emissions Modeling and Results

Air dispersion modeling was performed using the latest version of AERMOD (Version 19191). The AERMOD model is an EPA-approved, steady-state Gaussian air dispersion model that is designed to estimate downwind ground-level concentrations from single or multiple sources using detailed meteorological data. AERMOD is a model currently approved for industrial sources and PSD permits.

5.13.3.1 Control Technologies

A SCR system will be installed in the engine exhaust stack for NOx control. An oxidation catalyst used to control CO, VOCs, and hazardous air pollutants will also be installed downstream of the SCR catalyst within the catalytic converter assembly. The chemical reaction in the CO catalyst will combine with atmospheric oxygen molecules present in the engine exhaust with the CO molecules to yield CO_2. The presence of a catalyst will lower the activation energy required for the reaction. The catalyst is a series of metal plates such as platinum, palladium, and rhodium, which can be replaced periodically to maintain reaction efficiency. The catalyst beds that reduce CO also promote the oxidation of VOCs, thereby reducing VOC emissions.

The RICE unit emissions will be controlled as follows:

- NOx – Selective catalytic reduction
- CO – Good combustion practices, oxidation catalyst
- Particulate matter (PM)/particulate matter less than 10 microns (PM_{10})/ particulate matter less than 2.5 microns ($PM_{2.5}$) – Good combustion practices, combustion of low ash fuels

- VOCs – Good combustion practices, oxidation catalyst
- Greenhouse gases (equivalent carbon dioxide [CO_2e]) – Use of low carbon containing fuel in combination with efficient RICE generators

The natural gas-fired emergency generator emissions will be controlled as follows:

- CO, Particulate matter (PM)/particulate matter less than 10 microns (PM_{10})/ particulate matter less than 2.5 microns ($PM_{2.5}$), VOC, Greenhouse gases (equivalent carbon dioxide [CO_2e]) – use of a natural gas-fired emergency generator which meets the applicable *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* under 40 CFR 60, Subpart JJJJ, combined with limited hours of operation

The natural gas-fired natural gas heater and natural gas-fired space and water heaters will be controlled as follows:

- CO, particulate matter (PM)/particulate matter less than 10 microns (PM_{10})/ particulate matter less than 2.5 microns ($PM_{2.5}$), VOC – Clean fuel, good combustion practices
- Greenhouse gases (equivalent carbon dioxide [CO_2e]) – Clean fuel, good combustion practices, design efficiency standards

The sulfur hexafluoride (SF6) insulated electrical equipment will be controlled as follows:

- Greenhouse gases (equivalent carbon dioxide [CO_2e]) – Enclosed technology, leak determination

The natural gas piping systems will be controlled as follows:

- Greenhouse gases (equivalent carbon dioxide [CO_2e]) – Audio/visual/olfactory monitoring

Figure 3-1 in Section 3.0 provides a process flow diagram for the electric-generating RICE and controls.

5.13.3.2 Emission Rates

Emissions of criteria pollutants and greenhouse gases will occur from the Project equipment as detailed below.

5.13.3.2.1 Criteria Pollutants

The RICE electric generating unit engines will be operated at loads ranging from 25% to 100% of their rated output. Table 5-4 is a summary of estimated emissions at 25%, 50%, 75% and 100% of the rated output of the engines. Table 5-5 is a summary of the estimated emissions for each engine and for all seven

(7) engines combined during normal operation. Table 5-6 is a summary of the estimated startup and shutdown emissions for these engines. The SCR and oxidation catalyst air quality control systems are not functional during periods of startup and shutdown because the engine exhaust gas temperatures are too low for these systems to function as designed. The electric generating unit engines are designed to startup and shutdown rapidly in response to changing electric load demand requirements. Startup events are expected to take no more than 30 minutes to complete, and shutdown events are expected to take no more than 1.2 minutes to complete.

Table 5-4: Estimated Single RICE Unit Emissions Data at Various Operating Loads

Pollutant			Percent of Maximum Gross Output			
			100%	75%	50%	25%
Carbon monoxide	CO	lb/hour	4.43	3.46	2.40	1.41
Nitrogen oxides	NOx	lb/hour	3.00	2.34	1.63	0.95
Particulate matter	PM	lb/hour	2.37	1.85	1.93	1.31
Particulate matter	PM_{10}	lb/hour	2.37	1.85	1.93	1.31
Particulate matter	$PM_{2.5}$	lb/hour	2.37	1.85	1.93	1.31
Sulfur mioxide	SO_2	lb/hour	0.091	0.072	0.050	0.029
Volatile organic compounds	VOC	lb/hour	4.49	3.52	3.47	2.68
Sulfuric acid mist	H_2SO_4	lb/hour	0.030	0.024	0.017	0.010
Lead	Pb	lb/hour	7.6E-05	6.0E-05	4.2E-05	2.4E-05
Carbon dioxide	CO_2	lb/hour	17,815	14,037	9,826	5,615
Greenhouse gases	CO_2e	lb/hour	17,834	14,052	9,836	5,621

Table 5-5: Estimated Emissions for RICE Units during Normal Operation

Pollutant		Emissions (tons per year)	
		Each Engine	7 Engines Combined
Carbon monoxide	CO	17.0	118.8
Nitrogen oxides	NOx	23.0	161.0
Particulate matter	PM	9.1	63.6
Particulate matter	PM_{10}	9.1	63.6
Particulate matter	$PM_{2.5}$	9.1	63.6
Sulfur dioxide	SO_2	0.4	2.5
Volatile organic compounds	VOC	17.2	120.5
Sulfuric acid mist	H_2SO_4	0.1	0.61

Pollutant		Emissions (tons per year)	
		Each Engine	7 Engines Combined
Lead	Pb	0.0	0.0020
Carbon dioxide	CO_2	68,278	477,944
Greenhouse gases	CO_2e	68,348	478,438

Table 5-6: Estimated RICE Unit Emissions during Start-up and Shutdown

Pollutant		Startup/Shutdown (SU/SD) Emissions					
		Startup		Shutdown		Emissions, tons per year[1]	
		minutes	lb/event	minutes	lb/event	Each Engine	7 Engines Combined
Carbon monoxide	CO	30	13.0	1.2	0.098	8.34	58.3
Nitrogen oxides	NOx	30	13.5	1.2	0.054	9.00	63.0
Particulate matter	PM	30	1.80	1.2	0.047	1.63	11.4
Particulate matter	PM_{10}	30	1.80	1.2	0.047	1.63	11.4
Particulate matter	$PM_{2.5}$	30	1.80	1.2	0.047	1.63	11.4
Sulfur dioxide	SO_2	30	0.050	1.2	0.002	0.05	0.37
Volatile organic compounds	VOC	30	3.0	1.2	0.097	2.88	20.1
Sulfuric acid mist	H_2SO_4	30	0.013	1.2	0.0004	0.013	0.091
Lead	Pb	30	0.00001	1.2	0.000001	0.00002	0.00017
Carbon dioxide	CO_2	30	1,480.0	1.2	296.5	5,655	39,582
Greenhouse gases	CO_2e	30	1,481.5	1.2	296.8	5,660	39,623

[1] Emissions are based on 1,095 hours per year for start-up and shutdown.

5.13.3.2.2 Greenhouse Gases

Table 5-7 is a summary of the estimated hourly greenhouse gas emissions for each engine and for all seven (7) engines.

Table 5-7: Estimated RICE Hourly GHG Emission Rates

Pollutant			Each Engine	7 Engines Combined
Carbon dioxide	CO_2	lb/hour	17,815	124,708
Methane	CH_4	lb/hour	0.3	2.4
Nitrous oxide	N_2O	lb/hour	0.03	0.2
Hydrofluorocarbons		lb/hour	-	-

Pollutant			Each Engine	7 Engines Combined
Perfluorocarbons		lb/hour	-	-
Sulfur hexafluoride	SF_6	lb/hour	-	-
Greenhouse gases	CO_2e	lb/hour	17,834	124,837

5.13.3.3 Estimated Maximum Expected Annual Emission Rates

The estimated maximum expected annual emissions of each pollutant for the Project are presented in Table 5-8.

Table 5-8: Estimated Maximum Annual Emission Rates

Pollutant		Emissions (tons per year)
Carbon monoxide	CO	180.7
Nitrogen oxides	NOx	131.6
Particulate matter	PM	75.2
Particulate matter	PM_{10}	75.0
Particulate matter	$PM_{2.5}$	75.0
Sulfur dioxide	SO_2	2.8
Volatile organic compounds	VOC	141.1
Sulfuric acid mist	H_2SO_4	0.70
Lead	Pb	0.0022
Carbon dioxide	CO_2	520,722
Greenhouse gases	CO_2e	521,438

5.13.3.4 Projected Emissions in Tons-per-Year by Source

In addition to the RICE electric generating units, a natural gas-fired emergency generator, one natural gas-fired natural gas heater, natural gas-fired space and water heating, sulfur hexafluoride (SF_6) insulated electrical equipment, and natural gas piping systems will be included as part of the Project. Projected emissions from these sources are outlined in Table 5-9 and Table 5-10.

Table 5-9: Project Emissions by Source

Pollutant		Emissions (tons per year)					
		7 Electric Gen. Units	Emerg. Generator	Natural Gas Heater	Natural Gas Heating	SF_6 Insulated Equipment	Natural Gas Piping Systems
Carbon monoxide	CO	177.2	1.34	1.10	1.10	-	-
Nitrogen oxides	NOx	127.0	0.67	1.97	1.97	-	-
Particulate matter	PM	75.0	0.01	0.10	0.10	-	-
Particulate matter	PM_{10}	75.0	0.01	0.01	0.01	-	-
Particulate matter	$PM_{2.5}$	75.0	0.01	0.01	0.01	-	-
Sulfur dioxide	SO_2	2.8	0.00	0.01	0.01	-	-
Volatile organic compounds	VOC	140.6	0.33	0.07	0.07	-	-
Sulfuric acid mist	H_2SO_4	0.70	0.00	0.00	0.00	-	-
Lead	Pb	0.0022	0.0000	0.00	0.00	-	-
Carbon dioxide	CO_2	517,526	122	1,537	1,537	-	-
Greenhouse gases	CO_2e	518,060	122	1,539	1,539	4	174

Table 5-10: Project Emissions of Greenhouse Gases

Pollutant		Emissions (tons per year)					
		7 Electric Gen. Units	Emerg. Generator	Natural Gas Heater	Natural Gas Heating	SF_6 Insulated Equipment	Natural Gas Piping Systems
Carbon dioxide	CO_2	517,526	122	1,537	1,537	-	-
Methane	CH_4	10	0.002	0.03	0.03	-	7
Nitrous oxide	N_2O	1	0.0002	0.003	0.003	-	-
Hydrofluorocarbons		0	0	0.0	0	-	-
Perfluorocarbons		0	0	0	0	-	-
Sulfur hexafluoride	SF_6	0	0	0	0	0.00019	-
Greenhouse gases	CO_2e	518,060	122	1539	1539	4.5	174

5.13.3.5 National Ambient Air Quality Standards (NAAQS) and PSD Increments

The NAAQS are set by the EPA to protect human health and public welfare. The PSD Increment constitutes the maximum allowable ambient air quality concentration increase that may occur for a given pollutant above a baseline concentration. To determine if the Project will contribute to a NAAQS or PSD Increment exceedance, the Project was modeled along with the appropriate existing sources in the area. This was performed in two phases – an initial screening analysis that compared the Project impacts to the Significant Impact Levels (SILs), and then a refined model for pollutants/averaging periods with impacts

that exceeded the SILs. The initial Project modeling demonstrated that the CO and SO_2 impacts, and the annual PM_{10} impacts, were below the SILs and therefore the Project will not cause or contribute to an exceedance of the NAAQS or PSD Increments for these pollutants and averaging intervals. Because the impacts were less than the SILs, in accordance with WDNR and US EPA modeling guidance, refined NAAQS and PSD Increment modeling was therefore not performed for these pollutants and averaging intervals.

In summary, based on both the initial and refined modeling results, it has been predicted that the Project will have minimal effects on the NAAQS and PSD Class I and Class II Increment.

5.13.3.5.1 Background Ambient Levels

Regional background values were obtained from WDNR *Guidance on Background Concentrations* memo that lists values for both "low" and "high" background categories.[8] The Project is located in an area categorized as a "low" background area; therefore, the "low" background values will be used for each pollutant that requires a refined analysis. The background concentrations for NO_2, PM_{10}, and $PM_{2.5}$ are provided in Table 5-11.

Table 5-11: Background Concentrations

Pollutant	Averaging Period	Background Concentration (micrograms per cubic meter)
NO_2	Annual	HROFDY & MONTH[a]
	1-hour	HROFDY & MONTH[a]
PM_{10}	24-hour	29.4
$PM_{2.5}$	Annual	7.3
	24-hour	19.8

Source: WDNR, Guidance on Air Quality Background Concentrations, 2017
(a) Hour of day and monthly values are provided in the WDNR background guidance memo.

The modeling analysis demonstrates that the Project will not cause or significantly contribute to a violation of NAAQS or the PSD Class II Increments.

5.13.3.5.2 NAAQS Modeling Results

The existing air quality in the Marathon County area is designated as attainment or unclassifiable regarding the NAAQS for all criteria pollutants. The refined modeling showed that the Project will not

[8] WDNR, Guidance on Air Quality Background Concentrations, 2017

threaten continued attainment of the NAAQS in this area. The results of the NAAQS refined models are provided in Table 5-12. The Project sources were modeled along with all neighboring NAAQS sources.

Table 5-12: NAAQS Modeling Results

Site	Pollutant	Averaging Period	UTM Coordinates[a]		Year	Predicted Concentration	Background Concentration	Total Concentration	NAAQS
			Easting	Northing					
			meters	meters		micrograms per cubic meter (µg/m^3)			
Preferred Site	NO_2	Annual	290219	4970954	2012	14.6	N/A[d]	14.6	100
		1-hour	290500	4973300	5 yr	149	N/A[d]	149	188
	PM_{10}	24-hour	291225	4971375	5 yr	34.3	29.4	63.7	150
	$PM_{2.5}$	Annual	290921	4970443	5 yr	3.9	7.3	11.2	12
		24-hour	290921	4970443	5 yr	12.9	19.8	32.7	35
Alternate Site	NO_2	Annual	290144	4969489	2011	15.8	N/A[d]	16.0	100
		1-hour	290075	4969525	5 yr	137	N/A[d]	148	188
	PM_{10}	24-hour	299910	4970421	5 yr	26.9	29.4	56.3	150
	$PM_{2.5}$	Annual	290921	4970443	5 yr	3.8	7.3	11.1	12
		24-hour	290921	4970443	5 yr	12.4	19.8	32.2	35

(a) UTM = Universal Transverse Mercator: NAD83
(b) For some pollutants the model "design concentration" is a multi-year value; in this case, the value for Year is listed as "5 yr".
(c) ARM2 methodology was applied for the NO_2 modeling analyses.
(d) HROFDY & MONTH background data used; therefore, the modeled impact is presented as project impacts and background combined.

NOTE: The initial Project modeling demonstrated that the CO and SO_2 impacts, and annual PM_{10} impacts, were below the SILs and therefore the Project will not cause or contribute to an exceedance of the NAAQS or PSD Increments for these pollutants; because the impacts were less than the SILs, in accordance with WDNR and US EPA modeling guidance, refined NAAQS and PSD Increment modeling was therefore not performed for these pollutants.

5.13.3.5.3 PSD Increment Modeling Results

Refined modeling was performed for NO_2, PM_{10}, and $PM_{2.5}$ to demonstrate compliance with the PSD Class II Increments. All Project emission sources and all inventory sources (provided by WDNR) were included in the modeling analysis.

There were no modeled PSD Class II Increment exceedances for NO_2, PM_{10}, and $PM_{2.5}$ as shown in Table 5-13. Therefore, the Project will be in compliance with the Class II PSD Increment.

Table 5-13: PSD Class II Increment Modeling Results

Site	Pollutant	Averaging Period	UTM Coordinates		Year	Predicted Concentration	PSD Class II Increment
			Easting	Northing			
			meters	meters		micrograms per cubic meter (µg/m³)	
Preferred Site	NO_2	Annual	290219	4970954	2012	4.2	25
	PM_{10}	24-hour	290560	4971035	2011	28.2	30
	$PM_{2.5}$	Annual	290705	4970024	2015	0.5	4
		24-hour	289906	4970277	2011	7.1	9
Alternate Site	NO_2	Annual	290144	4969489	2011	5.5	25
	PM_{10}	24-hour	290560	4971035	2011	28.2	30
	$PM_{2.5}$	Annual	290318	4969275	2014	0.3	4
		24-hour	290059	4969538	2011	6.7	9

NOTE: The initial Project modeling demonstrated that the CO and SO_2 impacts, and annual PM_{10} impacts, were below the SILs and therefore the Project will not cause or contribute to an exceedance of the NAAQS or PSD Increments for these pollutants; because the impacts were less than the SILs, in accordance with WDNR and US EPA modeling guidance, refined NAAQS and PSD Increment modeling was therefore not performed for these pollutants.

An assessment of air quality impacts at Class I areas was performed to demonstrate that the operation of the Project will not result in, or contribute to, concentrations above the PSD Class I Increment threshold. There are two Class I areas that are within 300 kilometers of the Preferred and Alternate Sites. The respective distances are shown in Table 5-14.

Table 5-14: Distance from Project Sites to Class I Areas

Class I Area	Preferred Site (kilometers)	Alternate Site (kilometers)
Rainbow Lake Wilderness Area	215	215
Forest County Potawatomi Community	100	100

A screening to determine if further analysis is required was performed for the two Class I areas for NO_2, PM_{10}, and $PM_{2.5}$. The Class I Increment screening was analyzed with AERMOD at a 50-kilometer distance from the Project by placing an arc of receptors extending 45 degrees (+/-) from the line connecting the Project and the Class I area. The AERMOD modeled impacts in comparison to the Class I significance thresholds are shown in Table 5-15. Based on the screening, it was determined that the impacts from the Project will not significantly impact the PSD Class I Increment at the surrounding Class I areas and does not require further analysis.

Table 5-15: Class I Modeled Screening Impacts and Class I Significant Impact Level

Site	Pollutant	Averaging Time	Maximum Modeled Concentration (µg/m³)	Class I Significant Impact Level[1]
Preferred Site	NO_2[a]	Annual	0.015	0.1
	PM_{10}	24-hour	0.25	0.3
		Annual	0.008	0.2
	$PM_{2.5}$	24-hour	0.15	0.27[2]
		Annual	0.007	0.05[2]
Alternate Site	NO_2[a]	Annual	0.015	0.1
	PM_{10}	24-hour	0.25	0.3
		Annual	0.008	0.2
	$PM_{2.5}$	24-hour	0.15	0.27[2]
		Annual	0.007	0.05[2]

Sources:
(1) EPA. Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR) Proposed Rulemaking, July 23, 1996. (61 FR 38249).
(2) EPA Memorandum, 2018a, "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program."
(a) Modeled as NOx.

5.13.3.6 Expected Annual Emissions of CO_2, CH_4, N_2O, and Hydrofluorocarbons

The expected annual emissions in tons per year of CO_2, CH_4, N_2O, and hydrofluorocarbons by source assuming maximum capacity operation for 8,760 hours per year are provided in Section 5.13.3.6.1. Expected emissions for the same compounds assuming anticipated capacity factor that allows for outages and electric market variations are provided in Section 5.13.3.6.2.

5.13.3.6.1 Expected Emissions Assuming Maximum Capacity Operation for 8,760 Hours per Year

The expected annual emissions in tons per year of CO_2, N_2O, CH_4, and hydrofluorocarbons by source assuming maximum capacity operation for 8,760 hours per year are provided in Table 5-16.

Table 5-16: Annual Emissions by Source of CO_2, CH_4, N_2O, and Hydrofluorocarbons (Maximum Capacity)

Pollutant		Emissions (tons per year)					
		7 Electric Gen. Units	Emerg. Generator	Natural Gas Heater	Natural Gas Space Heating	SF_6 Insulated Equipment	Natural Gas Piping Systems
Carbon Dioxide	CO_2	546,222	5,328	1,537	1,537	-	-
Methane	CH_4	10	0.1	0.03	0.03	-	7
Nitrous Oxide	N_2O	1	0.01	0.003	0.003	-	-
Hydrofluorocarbons		-	-	-	-	-	-

5.13.3.6.2 Expected Emissions Assuming Anticipated Capacity Factor that Allows for Outages and Electric Market Variations

The expected annual emissions in tons per year of CO_2, CH_4, N_2O, and hydrofluorocarbons by source assuming anticipated capacity factor that allows for outages and electric market variations are provided in Table 5-17.

Table 5-17: Annual Emissions by Source of CO_2, CH_4, N_2O, and Hydrofluorocarbons (Anticipated Capacity Factor allowing for Outages and Electric Market Variations)

Pollutant		Emissions (tons per year)					
		7 Electric Generating Units	Emergency Generator	Natural Gas Heater	Natural Gas Space Heating	SF_6 Insulated Equipment	Natural Gas Piping Systems
Carbon Dioxide	CO_2	517,526	122	1,537	1,537	-	-
Methane	CH_4	10	0.002	0.03	0.03	-	7
Nitrous Oxide	N_2O	1	0.0002	0.003	0.003	-	-
Hydrofluorocarbons		-	-	-	-	-	-

5.13.3.7 Hazardous Air Pollutant Emission Estimates

HAP emission calculations and a summary of HAP emissions are included in Table 5-18.

Table 5-18: Estimated Hazardous Air Pollutant Emissions from the Project

Pollutant	Potential Emissions (tons per year)
1,1,2,2-Tetrachloroethane	0.09
1,1,2-Trichloroethane	0.07
1,1-Dichloroethane	0.06
1,2,3-Trimethylbenzene	0.05
1,2,4-Trimethylbenzene	0.03
1,3,5-Trimethylbenzene	0.08
1,2-Dichloroethane	0.06
1,2-Dichloropropane	0.06
1,3-Butadiene	0.62
1,3-Dichloropropene	0.06
2-Methylnaphthalene	0.08
2,2,4-Trimethylpentane	0.58
3-Methylchloranthrene	0.00
7,12 Dimethylbenz(a)anthracene	0.00
Acenaphthene	0.00
Acenaphthylene	0.01
Acetaldehyde	17.48
Acrolein	20.24
Anthracene	0.00
Benzene	1.03
Benz(a)anthracene	0.00
Benzo(k)fluoranthene	0.00
Benzo(b)fluoranthene	0.00
Benzo(e)pyrene	0.00
Benzo(g,h,i)perylene	0.00
Dibenzo(a,h)anthracene	0.00
Indeno(1,2,3-cd)pyrene	0.00
Biphenyl	0.50
Butane	1.26
Butyr/Isobutyraldehyde	0.24
Carbon tetrachloride	0.09
Chlorobenzene	0.07
Chloroethane	0.00
Chloroform	0.07

Pollutant	Potential Emissions (tons per year)
Chrysene	0.00
Cyclopentane	0.53
Dichlorobenzene	0.00
Ethylbenzene	0.09
Ethylene dibromide	0.10
Fluoranthene	0.00
Fluorene	0.01
Formaldehyde	156.58
Methanol	11.65
Methylcyclohexane	2.87
Methylene chloride	0.05
n-Hexane	2.64
n-Nonane	0.26
n-Octane	0.82
Naphthalene	0.17
PAH	0.06
Phenanthrene	0.02
Phenol	0.06
Pyrene	0.00
Styrene	0.06
Tetrachloroethane	0.01
Toluene	0.95
Vinyl chloride	0.03
Xylene	0.43
Arsenic	0.00
Barium	0.00
Beryllium	0.00
Cadmium	0.00
Hydrogen chloride	0.00
Chromium	0.00
Cobalt	0.00
Copper	0.00
Manganese	0.00
Mercury	0.00
Molybdenum	0.00

Pollutant	Potential Emissions (tons per year)
Nickel	0.00
Selenium	0.00
Vanadium	0.00
Total	**220.26**

5.13.4 Sources and Projected Amounts of Fugitive Dust and Control Measures

Fugitive dust sources and proposed control measures are described in the following sections.

5.13.4.1 Dust Sources and Control Measures

During construction, steps will be taken to limit emissions of particulate matter resulting from construction activities and vehicular traffic. These steps may include compacting, seeding, covering, paving, wetting, sweeping, or otherwise controlling particulate matter emissions.

Post-construction, the areas disturbed during construction will receive final cover to eliminate dust. All exposed soil areas will be seeded to grow grass.

5.13.4.2 Fuel Storage Piles and Fuel Handling Conveyance Fugitive Dust Emissions and Control Measures

No fugitive dust emissions are expected to occur since there will be no solid fuel.

5.14 Solid Waste Handling and Disposal

The Project will not generate solid waste as a result of electricity production because it will be fueled by natural gas. No other solid wastes will be generated by the Project during the production of electricity. Solid waste produced during the Project will only occur from construction debris, wastes produced by construction workers, and wastes produced by employees onsite during operation of the Project. These wastes will be collected in trash containers throughout the Project site and sent to a local landfill.

5.14.1 Solid Waste Identification

The Project will not generate solid waste as a result of electricity production.

5.14.2 Composition and Quantity of Wastes

The Project will not generate solid waste as a result of electricity production.

5.14.3 WDNR Solid Waste and Landfill Permits

No solid waste or landfill permits are anticipated for the Project.

5.14.4 Location of Solid Waste Storage, Transport, and Loading for Removal

The Project will not generate solid waste as a result of electricity production.

5.14.5 Potential for Beneficial Use or Reuse of Ash and Other Combustion Byproducts

The Project will not generate an ash byproduct because it will be fueled by natural gas.

5.14.6 Potential Ash Landfills

The Project will not generate an ash byproduct because it will be fueled by natural gas.

6.0 COMMUNITY RESOURCES IN THE PROJECT AREA

Community resources located in the vicinity of the Project are described below.

6.1 Community Resource Maps and Photos

6.1.1 Nearest Residences and Other Buildings

See Volume I Appendix G (Residential Concentration Areas) and Volume I Appendix S (Nearest Residences and Other Buildings Map) for maps showing the Sites in relation to the nearest residences and other buildings. The nearest residences are located 0.3 mile and 0.2 mile from the Preferred and Alternate ites, respectively.

6.1.2 Schools, Daycare Centers, Hospitals, and Nursing Homes

No schools, daycare centers, hospitals, or nursing homes are located within 0.5 mile of the Sites. The closest school is Evergreen Elementary School, located approximately 0.9 mile east of the Project boundary. The closest senior living center is located approximately 1.0 mile northeast of the Project boundary (see Volume I Appendix S [Sensitive Sites Map]).

6.2 Current Land Ownership

The Preferred and Alternate sites are currently owned by WPSC.

6.2.1 Temporary or Permanent Acquisition of Lands or Rights-of-Way

WPSC owns the Preferred and Alternate Sites. No land purchases or right-of-way easements will be required for the Project.

6.2.2 Options to Purchase

WPSC owns the Preferred and Alternate Sites. No land purchases will be required for the Project.

6.3 Local Zoning

The following sections describe the local zoning near the Sites.

6.3.1 Zoning Ordinances

See Volume II Appendix F for copies of zoning ordinances affecting the Project and the area within the half-mile Project boundary.

6.3.2 Existing Zoning and Expected Changes

Since the Weston Generation Station is partially in two municipalities, its footprint is within two zoning districts. The existing Weston Generating Station property is zoned M2-heavy industrial by the Village of

Kronenwetter and I2-heavy industrial by the Village of Rothschild. See Volume I Appendix R for a map showing zoning within 0.5 mile of the Sites. The Village of Kronenwetter defines heavy industrial as the following (Chapter 520 Article IV § 520-26(B):

> …industrial facilities at which operations have one or more of the following characteristics: conducted partially or wholly outside of an enclosed building (not including loading/unloading operations); associated with nuisances such as odor, noise, heat, vibration, and radiation detectable at the property line; and/or involving materials that pose a significant safety hazard (such as danger of explosion).

Power production facilities (power plants) are included as an example of a permitted use in heavy industrial land use. The Village of Rothschild zoning code defines the primary distinguishing feature of I2-heavy industrial as "activities which are typically associated with high levels of noise, soot, odors and other potential nuisances for adjoining properties" (Chapter 590 Article 2 § 590-27). No land use planning changes are required because the property is classified as industrial in both municipalities and no additional landscaping is anticipated. However, approximately 95 acres of land located on the southern portion of the existing Weston Generating Station property in the past was temporarily licensed to pasture cattle, spread whey from a local milk processing facility, spread mink manure from a local mink farm, and store gravel. The license to store gravel was never exercised. All the licenses were ended on September 1, 2003, due to neighbor complaints regarding odors resulting from the spreading of manure and whey, and to allow placement of the ATC substation and required Weston Unit 4 facilities.

The Project is located within 1,000 feet of the Wisconsin River. A Shoreland-Wetland Zoning Permit may be required for the Project. Copies of shoreland zoning areas for the Town of Mosinee and the Town of Rib Mountain are included in Volume II Appendix F.

The Project will not require zoning changes based on current zoning and permitted uses of existing zoning districts.

6.4 Land Use Plans

The following sections discuss land use plans. Copies of relevant portions of land use plans are provided in Volume II Appendix G.

6.4.1 Land Use Plans Adopted by Local Governments

The Weston Generating Station is located within the Villages of Rothschild and Kronenwetter, and the current land use is subject to the Village of Rothschild Comprehensive Plan 2016 and the Village of Kronenwetter Comprehensive Plan 2019. The Marathon County Comprehensive Plan 2016 also provides guidance to the towns, villages, and cities within the county; it is available at https://www.ncwrpc.org/marathon/county/1%20-%20Marathon%20County%20Comp%202016.pdf.

6.4.2 Conflicts with Land Use Plans

As described in Section 6.3, no zoning changes will be required for the Facility. The Facility will not change the current land use, and Weston Generating Station operations will continue to adhere local and regional land use plans.

6.5 Agriculture

The following sections discuss the current and past onsite farming activities, impacted practices, preservation lands, and potential mitigation.

6.5.1 Past and Present Farming Activities

Approximately 95 acres of land owned by WPSC, located on the southern portion of the existing Weston Generating Station property, in the past were temporarily licensed to pasture cattle, spread whey from a local milk processing facility, spread mink manure from a local mink farm, and store gravel. The license to store gravel was never exercised. All the licenses were ended on September 1, 2003 due to neighbor complaints regarding odors resulting from the spreading of manure and whey and to allow placement of the ATC substation and required Weston Unit 4 facilities. No farming activities currently take place on the WPSC property. The site does not contain drainage tile or irrigation.

6.5.2 Agricultural Practices Impacted

The Project is not anticipated to impact area agricultural practices during construction or operation due to its distance from agricultural areas.

6.5.3 Farmland Preservation Programs

No known farmland preservation programs are located within 0.5 mile of the Sites.

6.5.4 Mitigation of Agricultural Lands

The Project will not impact agricultural lands.

6.5.5 Agricultural Impact Statement

No impacts are anticipated to agricultural lands due to the Project. An agricultural impact notice was sent to the Wisconsin DATCP on March 25, 2021. An Agricultural Impact Statement is not required as the Facility does not cross private agricultural land. See Volume II Appendix A for correspondence with the Wisconsin DATCP as well as the formal release letter.

6.5.6 Non-Utility Private Properties Used for Agricultural Purposes

The Facility will not impact any non-utility properties used for agricultural purposes.

6.5.6.1 Agricultural Impact Notice

The Facility will not impact properties used for agricultural purposes. An agricultural impact notice was sent to the DATCP on March 25, 2021. See Volume II Appendix A for correspondence with the Wisconsin DATCP.

6.5.6.2 DATCP Correspondence

See Volume II Appendix A for correspondence with the Wisconsin DATCP.

6.5.7 Induced Voltage Issues

No induced voltage issues are anticipated for the Facility due to the distance of animal operations and agricultural buildings from the Weston Generating Station property. No new electric transmission or distribution lines are required for the Project outside of the existing property boundary of the Weston Generating Station property.

6.6 Conservation Easements and Programs

The following sections provide information on conservation easements near the Facility. Conservation easements are defined as voluntary legal agreements undertaken by a private landowner, who retains ownership of the property, which place restrictions on the use of the landowner's property to protect the natural attributes of the land.

6.6.1 Properties with Conservation Easement Agreements

The Project is not located within 0.5 mile of any known conservation easements.

6.6.2 Discussion of Conservation Easements

The Project will be located entirely within the Weston Generating Station property and will not cross any known conservation easements.

6.6.3 Managed Forest Law or Forest Crop Law Programs

The Project will be located entirely within the Weston Generating Station property and will not impact any properties enrolled in Managed Forest Law or Forest Crop Law programs.

6.7 Communication with Potentially Affected Public

The following sections provide a discussion of the methods used by Joint Applicants to communicate with and provide information to the affected public.

6.7.1 Public Communication

6.7.2 Public Meetings

The Joint Utilities have had initial discussions about the Project with representatives from Marathon County, the Village of Kronenwetter and Village of Rothschild.

Due to COVID-19, a community information meeting has not yet been held. Joint Applicants plan to hold an information meeting at a more appropriate time that allows for safe gatherings.

6.7.3 Public Outreach Mailings and Handouts

A letter explaining the permitting process along with a project overview is being sent in coordination with this filing to all property owners within ½ mile of the site.

See Volume II Appendix I (Public Communications) for copies of any outreach mailings and handouts.

6.7.4 Written Public Comments

At this time, no written public comments have been received.

See Volume II Appendix I (Public Communications) for copies of any public comments received.

6.8 Demographics

The following sections provide population, race, and income levels of residents within 0.5 mile of the Sites, the Village of Kronenwetter, the Village of Rothschild, and Marathon County.

6.8.1 Population, Race, and Income Levels

The Project's Preferred and Alternate Sites are within the Village of Kronenwetter, Wisconsin. The northern portion of the Weston Generating Station extends into the Village of Rothschild. The population composition of Kronenwetter Village is 91 percent White, with small percentages of Black or African American, American Indian, Asian, and other races. The population composition of Rothschild Village is 92.5 percent White, with small percentages of Black or African American, American Indian, Asian, and other races. The populations of the census tracts within 0.5 mile of the Project reflect this same trend, with the population composition ranging from approximately 92 percent to over 94 percent White. Table 6-11 provides the population statistics by race for the Villages of Kronenwetter and Rothschild and census tracts within 0.5 mile of the Project (Marathon County census tracts 11.02, 12.01, 12.02 and 13). The median household income levels within the vicinity of the Project range from $31,288 in census tract 12.02, to $40,160 in census tract 11.02. The Village of Rothschild had the greatest percentage of people whose income in the past 12 months was below poverty level (6.5 percent), while census tract 11.02 had the fewest (1.8 percent).

A map of the nearby communities is provided in Volume I Appendix P (Political Subdivision Boundaries Map) and a map of the nearest residences is provided in Volume I Appendix S (Nearest Residences and Other Buildings Map).

Table 6-1: Population Characteristics – Villages of Rothschild and Kronenwetter, and Census Tracts within ½ Mile of Project

Demographic Group	Village of Kronenwetter	Village of Rothschild	Census Tract 11.02	Census Tract 12.01	Census Tract 12.02	Census Tract 13
Total population	7,796	5,287	7,860	8,730	5,782	6,871
White (percent)	91	92.5	94.2	91.9	93.6	92.2
Black or African American (percent)	0.6	1.3	0.0	0.5	0.3	0.0
American Indian and Alaskan Native (percent)	0.1	0.7	0.0	0.1	0.3	0.0
Asian (percent)	3.2	5.9	5.3	2.8	0	6.9
Native Hawaiian and other Pacific Islander (percent)	0.7	0.0	0.0	0.7	0.0	0.0
Some other race (percent)	0.0	0.2	0.5	0.0	0.2	0.0
Two or more races (percent)	4.4	0.6	0.0	4	3.1	0.9
Hispanic or Latino (percent)	0.7	0.0	1.4	1.1	1	0.6
Median household income	$37,913	$36,278	$40,160	$37,141	$31,288	$32,317
All people whose income in the past 12 months is below the poverty level (percent)	3.7	6.5	1.8	4.5	5.7	2.8

Source: U.S. Census Bureau American Community Survey 5-Year Estimates, 2015-2019

6.8.2 Description of Marathon County

The overall Marathon County population reflects similar trends to the Villages of Kronenwetter and Rothschild. In Marathon County, over 90 percent of the population is White. Table 6-22 provides the population statistics for Marathon County. The median household income in Marathon County is approximately $32,832. This figure is lower than the Villages of Kronenwetter and Rothschild, which comprise the Project area. The percentage of all people whose income in the past 12 months was below

poverty level for residents in Marathon County was approximately 7.9 percent. This poverty level is higher than the Villages of Kronenwetter and Rothschild, at 3.7 percent and 6.5 percent, respectively. A map of the nearest cities, towns and villages within Marathon County is provided in Volume I Appendix P (Political Subdivision Boundaries Map).

Table 6-2: Population Characteristics – Marathon County

Demographic Group	Marathon County, Wisconsin
Total population	135,692
White (percent)	90.4
Black or African American (percent)	0.3
American Indian and Alaska Native (percent)	0.3
Asian (percent)	5.9
Native Hawaiian and other Pacific Islander (percent)	0.2
Some other race (percent)	0.5
Two or more races (percent)	2.5
Hispanic or Latino (percent)	3.0
Median household income	$32,832
Poverty level (percent)	7.9

Source: U.S. Census Bureau American Community Survey 5-Year Estimates, 2015-2019

6.9 Local Government Impacts

The following sections discuss potential local government impacts from the Facility.

6.9.1 List of Provided Services

The Facility will be connected to the Village of Kronenwetter municipal water treatment system to discharge sanitary waste. Emergency medical services are provided by Saint Clare's Hospital (Weston) and Wausau Hospital. Fire and police protection are provided by both the villages of Kronenwetter and Rothschild with stations located within 2 to 3 miles of the Weston Generating Station.

6.9.2 Local Government Infrastructure and Facility Improvements Required

The Facility will require minor construction of water pipelines to connect with the municipal water supply and sewerage systems. There will be no change in capacity needed because the existing municipal sewer water systems have sufficient capacity.

Currently, healthcare facilities are anticipated to be sufficient for the Facility during construction and operation, and no necessary improvements are anticipated. The Facility will have fire suppression measures of its own, as well as facilities for the storage of hazardous materials. This storage will require coordination activities with the Village Fire Departments. Police protection will be provided by the Villages of Kronenwetter and Rothschild, and the Wisconsin State Patrol, during both construction and operations, and no necessary improvements are anticipated related to police patrols.

6.9.3 Impacts on Local Budgets

6.9.4 Revenue

The expected annual revenue by unit of government associated with this Project is provided in Table 6-3 below.

Table 6-3: Expected Annual Revenue by Unit of Government

Unit of Government	Portion	Mil Rate	Base MW ($2,000/MW)	Incentive MW ($1,000/MW)[1]	Total
Marathon County	100%	0.003	$88,000	-	$88,000
Village of Kronenwetter	100%	0.006	$176,000	-	$176,000
		Total	$264,000	-	$264,000

[1] Incentive does not apply to this Project as it is not a renewable resource.

6.9.5 Community Benefits

Section 6.9.4 Above.

6.9.6 Existing Facility Retirements

As noted previously Joint Applicants are proposing this Facility as part of their GRP. While there is not a specific one-to-one relationship with specific retirements of other Weston units, at around the same time the Weston 2 unit and the Weston 31 and 32 peaking facilities will be retired.

6.9.7 High Voltage Transmission Line Fee Distributions

Other than a new 115-kV transmission interconnection facility within the existing Weston Generating Station, no other transmission lines are needed for the Project. Fee distributions do not apply.

6.10 Workforce

The following sections describe the proposed workforce size, skills, and expected sources for construction and operation of the Project.

6.10.1 Workforce Size and Skills

During construction, the Project will create up to 100 jobs during peak activity. These jobs will include construction management staff, site superintendents, skilled craftsmen, engineers, start-up support personnel, and other miscellaneous services. Manufacturer's representatives will be onsite periodically; although, these representatives will not significantly increase the number of workers onsite at any given time.

Craft labor, including carpenters, heavy equipment operators, laborers, millwrights, ironworkers, masons, pipefitters, and electricians, will be required during construction. Other staff will also be onsite during construction, such as management, engineering, technical, and start-up staff. The number of workers onsite will begin at nominal levels at the beginning of construction and steadily increase over time.

The future operational staff (up to 10 full-time permanent jobs) will require a group of individuals trained to operate and maintain a RICE-powered generation facility. The training and skills required will include but not be limited to Facility-specific trained control operators, maintenance technicians, and supervisory personnel. Due to the close proximity of the existing Weston units, some of the current site supervisory and maintenance personnel can be shared.

6.10.2 Workforce Source

Contractors will be chosen from a competitive bid process and will be local whenever practical. The workforce may be sourced from different locations locally or nationwide. WPSC, construction contractor, and subcontractors will supply staff for management, engineering, technical, start-up, and other support staff. Skilled labor, including carpenters, heavy equipment operators, laborers, millwrights, ironworkers, insulators, painters, boilermakers, sheet metal workers, masons, pipefitters, electricians etc., will be sourced as available from subcontractors and/or local union labor halls.

6.11 Traffic, Roads, Railroads

The following sections provide a discussion of vehicle types to be used, construction traffic at each proposed site, potential impact of construction traffic, changes to traffic, and permanent changes to existing roads, railroads, and traffic signals as a result of the Project.

6.11.1 Vehicle Types

Construction traffic entering the Project site will primarily consist of automobile traffic for craft labor, construction management staff, contractors, equipment, and vendors. Material and equipment deliveries may be made by large trucks as well as heavy haul vehicles. Onsite traffic is anticipated to primarily consist of heavy construction equipment and material transport equipment.

6.11.2 Construction Traffic at Site Alternatives

The proposed construction entrance is shown in Volume I Appendix H (Figure H-2) and will consist of a material delivery entrance and main construction entrance the utilizing existing roads and craft check-in gatehouse. For the Preferred Site, these entrances will be located off Morrison Avenue on the north end of the Existing Site. Craft employees will park on the north of the Site and proceed directly south the Project Site. For the Alternate Site, the entrance location will be the same and craft parking lot will be north of the facility. Vehicle access to either site will be controlled by the existing gatehouse located off the northern entrance from Morrison Avenue.

The construction site will be operated as a restricted worksite on the existing Weston property. Craft workers will be required to 'badge in' when arriving at the site gatehouse and proceed to parking in the designated parking area. Designated walk paths to working locations will be constructed for craft workers to use. Craft workers will be expected to remain in the construction area onsite for the duration of their shifts, including a lunch break.

6.11.3 Estimated Traffic Frequency and Volume

Construction traffic entering the Project site will primarily consist of automobile traffic for craft labor, construction management staff, contractors, equipment, and vendors. Also, material and equipment deliveries may be made by large trucks as well as heavy haul vehicles.

The frequency of the daily workforce automobile traffic will follow the Project workforce numbers onsite at a given time. The daily automobile traffic to the site will increase from approximately 25 to 50 vehicles in the initial stages of construction to approximately 100 to 150 vehicles for peak months. The traffic will begin to decrease until it reaches approximately 25 vehicles near construction completion.

Material and equipment deliveries are anticipated to average between 5 and 15 trucks per day. Bulk deliveries for materials such as crushed stone, hot asphalt paving, and redi-mix concrete may occasionally exceed 15 vehicles on a given day. When possible, bulk deliveries will be scheduled to avoid peak traffic on local roads.

6.11.4 Estimated Impacts on Local Transportation System

Joint Applicants anticipate that material deliveries will use the Wisconsin Interstate highway system to Interstate 39, US 51, and State Highway 29 and 153, then to the local roads and into the Facility entrance roads. Heavy haul components such as transformers, engines, and generators could be transported via barge, rail, or heavy haul truck to the Project area, then transported over local roads via heavy haul truck to the site. Heavy haul transports will likely use Interstate 39 and US 51 to access the Project site, subject to the limits imposed by the governing heavy haul permits. Construction material and workforce will come to the Project site via rubber-tired transport.

6.11.4.1 Potential for Road Damage

Joint Applicants do not expect any permanent damage to roads with the implementation of mitigation measures proposed in Section 6.15.3.6.

6.11.4.2 Traffic Congestion

Joint Applicants will work with the appropriate county or municipal authority on solutions to potential traffic congestion that may develop as a result of the construction traffic.

6.11.4.3 Rail Line Usage

A Canadian National rail line is located along the eastern boundary of the WPSC-owned property and follows the Old Highway 51 corridor. This rail line is connected to the existing rail spur at the Weston Generating Station. No additional connections will be required by the Project. Railroads onsite may be used for equipment deliveries during Project construction.

6.11.4.4 Management of Heavy/Large Loads

Heavy haul and oversized permit loads will travel along the roadways described in Section 6.11.4.1. Certain oversized loads with height or width requirements may require alternate routes other than the roadways described above and these are shown on Volume I Appendix W (Existing Roads Map). Oversized loads and heavy loads will be planned and scheduled well in advance of shipping. Permits will be acquired before delivery. Vehicle escort services will be used for delivery as well.

6.11.5 Operational Traffic

Up to 10 full-time permanent employees will be hired for the Project. The addition of 10 permanent employees will have no significant effect on road traffic near the site during operation. All Facility personnel and deliveries to and from the Sites will enter from Morrison Avenue at the existing entrance.

6.11.6 Permanent Road Changes

No permanent changes to existing roads are anticipated as part of the Project.

6.12 Noise

The following sections provide information on noise associated with the Project.

6.12.1 Existing and Projected Noise Measurements

Environmental sound level measurements were obtained to establish the exiting ambient sound levels in the areas surrounding the proposed facility. The environmental sound level measurements were taken in accordance with the PSCW Measurement Protocol for Sound and Vibration. The full sound report is included in Volume II Appendix H (Sound Assessment Study).

The land use immediately surrounding the proposed generating station locations is industrial, woodland, open land, transportation, commercial, and residential. The nearest residential properties to the Preferred Site are east, across Old Hwy 51 (6-12 approx. 1,800 feet from the permanent project boundary) and west across the Wisconsin River (6-12 approx. 2,000 feet from the permanent project boundary). The nearest residential properties to the Alternate Site are southeast, across Old Hwy 51 (6-12 approx. 850 feet from the permanent Project boundary) and to the south, along Gardner Park Road (6-12 approx. 1,300 feet from the permanent Project boundary).

The sound level measurement periods were 10 minutes long, and measured values were logged by the sound level meter at each MP. Measured sound levels varied at each MP due to operation of the existing Weston Power Station and background sounds that occurred during the measurements. Background sounds included sound associated with vehicular traffic from nearby roads and highways (including large trucks) and wildlife noise such as birds and insects. Details of the noise measurements are provided in Volume II Appendix IH(Sound Assessment Study).

6.12.2 Local Noise Ordinances

Applicable Federal, State, county, and municipal noise ordinances were reviewed for the Project area. The Project will be in the Village of Kronenwetter, Wisconsin. The Project sound levels are limited by the Marathon County and Village of Kronenwetter sound level limits. Marathon County limits industrial districts to 70 dBA at the property line, and the Village of Kronenwetter limits industrial sources to an 8 dBA increase over the existing ambient sound level at the facility property line.

6.12.3 Noise Impacts

Using industry-accepted sound modeling software (CadnaA), the expected sound pressure levels of the Project were predicted. The software is a scaled, three-dimensional program which considers each piece of sound-emitting equipment and predicts sound-pressure levels over a gridded geographic area of interest. The model calculates sound propagation based on International Organization for Standardization (ISO) 9613-2:1996, General Method of Calculation. ISO 9613-2 assesses the sound levels based on the octave

band center frequency range from 31.5 to 8,000 hertz. The Project was modeled both for the Preferred Site and Alternative Site locations and both within the Village of Kronenwetter.

The analysis is based on the Wärtsilä W18V50SG estimated sound power levels for the RICE generators and historical data from the Burns & McDonnell library for the balance of plant equipment. A summary of all noise source sound power levels has been included in Volume II Appendix H (Sound Assessment Study).

In the model, appropriate sound generation was applied to all sound-radiating surfaces and points. The planned site grading topography changes have been included in the respective noise models for both sites. The noise modeling results demonstrate that sound levels generated by the Preferred and Alternative Sites, as designed, would not exceed 70 dBA or an 8-dBA increase over ambient at the Facility property line. Details of the noise impacts from the Project are provided in Volume II Appendix H (Sound Assessment Study).

6.12.3.1 Fuel Delivery Train Couplings

No coal delivered by trains will be used by the Project.

6.12.3.2 Fuel Unloading

No coal delivered by trains will be used by the Project.

6.12.3.3 Rail Car Noise

No fuel delivered by trains will be used by the Project.

6.12.3.4 Unloading, Dumping, and Loading of Fuel Delivery Trucks and Ash/Waste Removal Trucks

Fuel will be delivered to the site via an existing lateral natural gas pipeline.

6.12.3.5 Steam Blows for Facility Start-Up

The Project will use RICE generators for power generation. No steam will be produced.

6.12.3.6 Cooling Tower Operation

The Project will not operate a cooling tower.

6.12.3.7 Other Dominant Generation Unit Components

Dominant noise sources that are expected to be part of the Project were incorporated into the predictive modeling. A listing of the sources and their sound levels is included in the full noise report, included as Volume II Appendix H (Sound Assessment Study).

6.13 Odors

No odors are expected to be perceived outside the Facility boundary during construction or operation.

6.14 Fogging and Icing

The Project will not operate a cooling tower.

6.15 Residential and Urban Communities

The nearest residences and neighborhoods are identified in the following sections.

6.15.1 Nearby Residences

The number of residences and other buildings for each of the Sites are listed in Table 6-4 along with the range of distances to each site (See also Volume I Appendix S [Nearest Residences and Other Buildings Map]). The nearest residences are located approximately 0.3 mile east of the Preferred Site permanent project boundary. The nearest residences to the Alternate Site permanent project boundary are located approximately 0.2 mile to the southeast.

Table 6-4: Residences and Other Buildings within the 0.5-Mile Project Boundary

Site Alternative	Building Type	Number within 0.5-Mile Project Boundary[1]	Range of Distances from Project Boundary (feet)
Preferred Site	Residence	39	1,250 to 2,625
	Commercial	18	750 to 2,575
	Municipal	5	1,450 to 1,615
Alternate Site	Residence	64	630 to 2,635
	Commercial	25	750 to 2,595
	Municipal	5	1,450 to 1,615

[1] Project boundary includes temporarily and permanently areas impacted by the Project.

6.15.2 Impacts to Residential/Urban Neighborhoods

The land use immediately surrounding the proposed Project is industrial, commercial, and residential. There are residential properties to the east and west of the Preferred Site and southeast, south, and southwest of the Alternate Site. The following sections discuss the potential impacts to residential neighborhoods located in the vicinity of the Preferred and Alternate Sites.

6.15.2.1 Cooling Tower Impacts

The Project will not operate a cooling tower.

6.15.2.2 Noise

Sound levels are expected to increase during the construction of the Facility in the daytime hours. If construction occurs during the nighttime hours, sound levels could also increase. At this time, nighttime construction is not planned to occur as a regular construction activity.

Burns & McDonnell conducted a sound assessment study to measure the current sound levels and to model the anticipated sound levels resulting from the operation of the Project. See Section 6.12 for additional information related to the noise study conducted. Details of the noise impacts from both Sites are provided in Volume II Appendix H (Sound Assessment Study).

The noise modeling results demonstrate that sound levels generated by the Preferred or Alternative Project sites, as designed, would not exceed 70 dBA or an 8-dBA increase over ambient at the Project property line. The impacts from the Project to the nearest residential properties range between 34 and 44 dBA for the Preferred Site and between 33 and 53 dBA for the Alternative site. The sound levels from the Alternative site are significantly louder and have a greater increase to the existing sound environment than the Preferred Site.

6.15.2.3 Dust

Project construction will create additional airborne dust due to construction activities onsite. Offsite impacts are expected to be minimal due to the implementation of BMPs to reduce the amount of dust generated during construction. Facility operation is not expected to result in generation of a noticeable amount of dust because any well-traveled surfaces will be paved to reduce dust generation.

6.15.2.4 Aesthetics

The aesthetics of the surrounding area will not be significantly altered by the Project. Photo simulations of the Sites are provided in Volume I Appendix X (Photo Simulations).

Both the Preferred and Alternate Sites are located at the Weston Generating Station. While the addition of the Project will alter the aesthetics in the immediate surrounding, its construction will add to the industrial nature of the surrounding area. Components of the Preferred Site would be visible from Old Highway 51.

The Alternate Site will be situated immediately north of the existing 345-kV substation. Components of the Alternate Site would also be visible from Old Highway 51.

6.15.2.5 Lighting

The Project will result in the installation of lighting at locations where lighting does not currently exist; however, lighting will be designed to reduce offsite lighting impacts. See Section 6.16.2 for lighting techniques to be used to minimize impacts.

6.15.2.6 Air Emissions

Based on the modeling results, it has been predicted that the Project will have minimal effects on the NAAQS and PSD Class I and Class II Increment. See Section 5.13 for more information related to air emissions.

6.15.2.7 Road Impacts

Construction traffic and any road closures will be temporary in nature and cease after construction is complete. Traffic during operation will primarily include employees entering or exiting the Facility, as well as occasional maintenance vehicles. Traffic during Project operation will increase vehicles on nearby roads but is not anticipated to significantly increase traffic due to the number of employees anticipated. With the mitigation measures proposed in Section 6.15.3.6, Joint Applicants do not expect any permanent impact on roads.

6.15.3 Mitigation

The following sections describe mitigation measures related to residential and urban communities to be implemented for the Project.

6.15.3.1 Cooling Tower Impact Mitigation

The Project will not operate a cooling tower.

6.15.3.2 Noise

The following mitigation was incorporated into the noise model based on the planned equipment and Project design.

- Ultra-low-noise radiator (49 dBA at 40 meters per radiator, six radiators required per engine)
- Concrete Engine hall acoustical walls (STC 55)
- Engine hall acoustical roof (STC 58)
- Wärtsilä provided exhaust silencers
- Wärtsilä provided exhaust resonators
- Wärtsilä provided selective catalytic reduction system
- Wärtsilä provided charge air intake silencers (45-dBA Silencer)
- Building auxiliary vent fans (90 dBA at 3 feet)
- Building generator side vent fans (90 dBA at 3 feet)
- Roof ridge vent silencer

6.15.3.3 Dust Mitigation

BMPs will be implemented to reduce the amount of dust generated during construction. Well-traveled surfaces will be paved to reduce the potential for dust generation during operations.

6.15.3.4 Aesthetics

The Project will be located on the existing Weston property and will not include additional components to improve aesthetics.

6.15.3.5 Lighting Impact Mitigation

Outdoor light fixtures will be fully shielded and directed downward to minimize light visible from adjacent properties and to reduce glare in the area. Any floodlights required for the operation of the Project will be directed inward towards the Facility and will have top and side shields. Construction lighting impacts will be mitigated by scheduling most construction activities during daylight hours. The exhaust stack will be the tallest structure at the Facility. All other structures will be shorter and, therefore, most lighting will be close to the ground. Trees will remain along the east and south side of the Preferred Site property and around most of the Alternate Site property. These trees will help shield lighting from nearby roads.

6.15.3.6 Road Impact Mitigation

Joint Applicants do not anticipate permanent damage to roads. As a precautionary measure, Joint Applicants will video-document the condition of all roads on the construction vehicle routes from the construction entrances for either Site leading to Old Highway 51 to document the road condition prior to the start of construction. Any documented adverse impacts to the roads incurred due to the construction of the Project will be addressed through consultation with applicable road authorities regarding the Joint Applicants' responsibility for repairing the adversely impacted roads.

Joint Applicants will coordinate the proper construction signage on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

6.15.4 Property Value

The Site has been is being used as an electric generating station prior to the development of the Project. There are no anticipated impacts on property values as a result of the Project.

6.15.5 Impacts to Regional Communities

The area surrounding the Sites ranges from undeveloped wooded wetland to industrial oil and gas development. The Project will not involve any river-related activities. Based on the modeling results, it has been predicted that the Project will have minimal effects on the NAAQS and PSD Class I and Class II

Increment. With the mitigation measures noted in Section 6.15.3 and the installation of air pollution emission control equipment (described in Section 3.5), the Project is not anticipated to adversely impact the regional community.

6.15.6 Concerns Raised by Groups or Communities

No concerns have been raised regarding the Project.

6.15.7 Hospitals, Schools, Daycare, and Retirement Homes

No schools, daycares, senior living centers, churches, medical facilities, or hospitals are located within 0.5 mile of the Project boundary; see Volume I Appendix S (Sensitive Sites Map).

Hospitals

No hospitals are within 0.5 mile of the Preferred or Alternate Sites. The nearest hospital is the Weston-Marshfield Medical Center, located on Ministry Parkway approximately 4.2 miles northeast of the WPSC property.

Schools

No schools are within 0.5 mile of the Preferred or Alternate Sites. The closest school is Evergreen Elementary School, located approximately 0.9 mile east of the Project boundary.

Daycares

No day care facilities are located within 0.5 mile of the Preferred or Alternate Sites.

Retirement Homes

No retirement facilities are located within 0.5 mile of the Preferred or Alternate Sites. The closest senior living center is located approximately 1.0 mile northeast of the Project boundary.

6.16 Visual Impacts

The following sections describe potential visual impact of the Project to the surrounding area.

6.16.1 Facility Profiles and Appearances

The following subsections describe the Facility dimensions, provide photo simulations of the proposed Facility, and identify scenic roads in the area.

6.16.1.1 Facility Profiles and Appearances

See Volume I Appendix X for Facility profiles and appearances.

6.16.1.2 Photo Simulations

The photo simulations are approximations of the Facility orientation and size. See Volume I Appendix X for photo simulations of the Project.

6.16.1.3 Scenic Roads in the Project Area and Potential Impact

No scenic byways or roads are located near the Project boundary. No impacts to scenic roads are anticipated due to Project construction and operation.

6.16.2 Lighting

The following sections provide details concerning lighting during construction and Facility operation, as well as potential impacts of light on adjacent land uses and local ordinances that relate to the proposed lighting plans.

6.16.2.1.1 Site Lighting Plan for Construction

The Project will require night lighting for safety and security during construction. The Project site, temporary laydown areas, parking lots, and work areas may also need to be lighted at times during winter workdays or second shifts. Outdoor light fixtures will be fully shielded and directed downward to minimize light visible from adjacent properties and to reduce glare in the area. Construction lighting impacts will be further mitigated by scheduling most construction activities during daylight hours. The exhaust stacks will be the tallest structure at the site. All other structures will be shorter, and, therefore, most lighting will be close to the ground. The Federal Aviation Administration (FAA) requires an obstruction evaluation be completed for the exhaust stack at each alternative site. The stacks will be 65 feet tall are not expected to require lighting by the FAA for aircraft safety purposes. Copies of the FAA obstruction evaluations will be provided when they have been completed by the FAA.

The area surrounding the Preferred Site to the north, east and south is industrial and part of existing generation facilities in the vicinity of the site that includes exterior lighting. Wooded areas on the southern and western side of the Preferred Site will shield most of the lighting from the site for the residences in this area.

The area surrounding the Alternate Site to the north, east and south is industrial and part of existing generation facilities in the vicinity of the site that includes some exterior lighting. A coal unloading railyard is also located to the east of the site and the existing ATC Gardner Park 345-kV switching station is located to the south and both contain exterior lighting. Wooded areas on the western side of the Alternate Site will shield most of the lighting from the site for the residences in this area.

6.16.2.1.2 Site Lighting Plan for Operations

Light emissions at either the Preferred or Alternate Site will increase minimally compared to current levels of light emissions due to both Sites being located within the Weston Generation Station. The lighting regime near the Preferred Site is currently influenced by lighting at existing Weston Units 3 and 4, associated coal handling system, and Weston Unit 3 cooling tower. The lighting regime near the Alternate Site is currently influenced by lighting from the existing railyard and ATC Gardner Park 345-kV switching station.

The Project site will require exterior lighting for safety and security. Lights will be required in parking areas, on service roads around the Facility, at pedestrian entrances to various buildings, and along walkways on the property. Facility service roads, parking areas, and walkways will be illuminated with roadway lighting fixtures on poles. Building entrances will be illuminated with fixtures mounted directly above doors. Outdoor light fixtures will be fully shielded and directed downward to minimize light visible from adjacent properties and to reduce glare in the area. Any floodlights required for the operation of the Project will be directed inward towards the Facility and will have top and side shields. As noted in Section 6.16.2.1.1, the FAA requires an obstruction evaluation be completed for the exhaust stacks at each Site. The stacks will be 65 feet tall are not expected to require lighting by the FAA for aircraft safety purposes. Copies of the FAA obstruction evaluations will be provided when they have been completed by the FAA.

6.16.2.1.3 Potential Impacts of Site Lighting

At the Preferred Site, the nearest residential property is over 1,700 feet east of the site and any potential lighting from the site would be shielded by the existing coal pile located between the site and the residences in this area. The nearest residential property to the west is over 2,000 feet from the Preferred Site and would be shielded by trees along the western side of Weston Generation Station and near the residential areas. There are no expected to increases in lighting impacts to residences associated with the Preferred Site.

At the Alternate Site, the nearest residential property is approximately 900 feet southeast of the site. Residences in this area experience light from the existing railyard and ATC Gardner Park 345-kV switching station but may experience a minimal amount of new light impact from the site. The nearest residence residential property to the south is over 1,200 feet from the site and residences in this area also experience light from the existing railyard and switching station but would also be shielded from some light by the perimeter wall around the switching station and existing trees. Residences further away to the southwest and west would be shielded by trees along the western side of Weston Generation Station and near the residential areas. There may be minimal increases to lighting impacts associated with the Alternate Site.

6.16.2.1.4 Local Ordinances

Volume II Appendix F (Zoning Ordinances) and Volume II Appendix G (Land Use Plans) includes Villages of Kronenwetter and Rothschild ordinances related to lighting.

6.17 Parks and Recreation Areas

Within the half-mile project boundary, a bike route and a municipal park (Gooding Park) are located east of the Sites, along Old Hwy 51. No parks or other recreation areas are located within 0.5 mile of the Sites. No short or long-term mitigation measures are proposed.

6.18 Airports

6.18.1 Location of Airports

There are two public use airports located nearest to the Sites, Wausau Downtown Airport (Airport ID AUW) to the north and Central Wisconsin Airport (Airport ID CWA) to the south. Wausau Downton Airport is located approximately 4.4 nautical miles north of the Preferred Site and approximately 4.8 nautical miles north of the Alternate Site. Central Wisconsin Airport is located approximately 4.8 nautical miles south of the Preferred Site and 4.3 nautical miles south of the Alternate Site. Other nearby air facilities to the west include Vahalla Airport, a private use airstrip located approximately 4.6 nautical miles from the Preferred Site and 4.5 nautical miles from the Alternate Site; and Scherrico Meadows Airport, also a private use airstrip located approximately 6.3 nautical miles from both the Preferred and Alternate Sites. Jaks Field Airport, also a private use airstrip located southeast approximately 5.7 nautical miles from the Preferred Site and 5.2 nautical miles from the Alternate Site.

There are also two private use heliports in the general vicinity of the Project. St. Clare's Hospital Heliport is the closest, located northeast approximately 3.8 nautical miles from the Preferred Site and approximately 4.0 miles from the Alternate Site. The second heliport is Aspirus Wausau Hospital Heliport, located north approximately 6.7 nautical miles from the Preferred Site and 7.1 nautical miles from the Alternate Site.

6.18.2 Airport Descriptions

Wausau Downtown Airport has two asphalt paved runways, one of which is 5,200 feet long and oriented southeast-northwest, and the other is 3,041 feet long and oriented southwest-northeast. Central Wisconsin Airport has two concrete runways, one of which is 7,648 feet long and oriented north-south, and the other is 6,501 feet long and oriented east-west. Vahalla Airport has one turf runway, oriented east-west that is 1,450 feet long. Scherrico Meadows Airport has one turf runway, oriented east-west, that is 2,525 feet long. Jaks Field Airport also has one turf runway, oriented east-west, that is 1,490 feet long. St. Clare's Hospital Heliport is a 40-foot by 40-foot concrete helicopter landing pad. Aspirus Wausau Hospital Heliport is a 66-foot by 66-foot concrete helicopter landing pad.

6.18.3 Potential Impact to Navigable Airspace

Any structure (including permanent structures and temporary construction equipment) on the Project site that exceeds 200 feet above ground level in height will be considered an obstruction to navigable airspace and could impact aircraft safety unless it is marked and lighted in accordance with criteria set forth by the FAA. The FAA does not study potential impacts to private use airports unless that airport has instrument procedures approved by the FAA. None of the private use facilities in the area, including the two heliports, have instrument procedures and are therefore not subject to the FAA obstruction evaluation process. The Wausau Downtown Airport and Central Wisconsin both have multiple published instrument procedures. The runways for both airports are greater than 20,000 feet from the Project sites, which typically does not require an aeronautical study, but by using the FAA's Notice Criteria Tool, an aeronautical study was recommended. The stacks will be 65 feet tall, and an aeronautical study will be completed by the FAA for the stacks at both Sites. Copies of the FAA obstruction evaluations will be provided when they have been completed by the FAA. The WisDOT Bureau of Aeronautics will be provided copies of the FAA obstruction evaluation for review, but a tall structures permit is not expected to be required for this Project.

6.18.4 Construction Limitations and Permits

Any structure (including permanent structures and temporary construction equipment) on the Project site that exceeds 200 feet above ground level in height would be considered an obstruction to navigable airspace and could impact aircraft safety unless it is marked and lighted in accordance with criteria set forth by the FAA. A Determination of No Hazard to Air Navigation is expected to be issued by the FAA and will be provided when it is complete. The general contractor will be responsible for filing pre-construction notification for the temporary cranes.

The Village of Kronenwetter does have an Airport Height Limitation Overlay District that limits the height and use of structures within an area associated with the Central Wisconsin Airport. The maximum heights are represented on the Central Wisconsin Airport Height Map prepared by Marathon County. The airport height map extends three miles from the Central Wisconsin Airport, the boundary of which is approximately 0.5 mile beyond the half-mile project boundary. Marathon County has a permit process for proposed structures within the three-mile area; however, a permit would not be required for this Project because it is located outside the three mile boundary.

6.18.5 Consultation Documentation

Documentation of consultation with the FAA and WisDOT Bureau of Aeronautics will be provided when it is complete.

6.19 Communication Towers

Joint Applicants used the Federal Communications Commission (FCC) GIS data to identify communication towers, such as cellphone towers and TV towers, within 0.5 mile of the Sites and potential connecting transmission line routes; Table 6-5. No new towers are planned as part of the Project.

Table 6-5: Communication Towers within 0.5 Mile of the Alternative Sites

Tower Identification Number	Call Sign	Licensee Name	Tower Type	Distance from the Approximate Project Site Boundary (feet)
L00000217	1213440	WAUSAU CELLULAR TELEPHONE COMPANY LIMITED PARTNERSHIP DBA CELLCOM	ASR	2,430
12101	KNKA619	WAUSAU CELLULAR TELEPHONE COMPANY LIMITED PARTNERSHIP	Cellular	2,430
1997	KNKD729	JSM TELE-PAGE, INC	Paging	660

Source: FCC GIS, 2021

6.19.1 Potential Interference with Communication Towers

The Project is not expected to interfere with communication tower signals based on the location of the facility within the existing Weston Generation Station. If needed, Joint Applicants will work with the licensees near the Project site to mitigate any potential interference as applicable.

6.19.2 GIS Location Information

See Volume I Appendix U for a map showing communication towers near the Sites.